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Transmitted Via Overnight Courier

September 1, 2005

Mr. William P. Lovely, Jr. (MC HBO)
USEPA – New England
One Congress Street, Suite 1100
Boston, Massachusetts 02114-2023

**Re: GE-Pittsfield/Housatonic River Site
Lyman Street Area (GECD430)
Final Removal Design/Removal Action Work Plan**

Dear Mr. Lovely:

Enclosed for your review is GE's *Final Removal Design/Removal Action Work Plan for the Lyman Street Area*.

Please call Dick Gates if you have any questions about this work plan.

Sincerely,

Andrew T. Silfer / D A J

Andrew T. Silfer, P.E.
GE Project Coordinator

Enclosure

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**cover letter only*

***Final Removal Design/
Removal Action Work Plan for
Lyman Street Area***

**General Electric Company
Pittsfield, Massachusetts**

September 2005

Table of Contents

Section	1. Introduction	1-1
	1.1 General	1-1
	1.2 Description of the Lyman Street Area	1-3
	1.3 Contents of Final Work Plan.....	1-5
	1.4 Scope and Format of Work Plan	1-6
Section	2. Summary of Pre-Design Investigation Activities.....	2-1
	2.1 General	2-1
	2.2 Summary of Pre-Design Soil Investigations	2-1
Section	3. Summary of PCB and Appendix IX+3 Evaluation Procedures	3-1
	3.1 General	3-1
	3.2 Summary of PCB Evaluation Procedures	3-1
	3.2.1 PCB-Related Performance Standards	3-1
	3.2.2 Status of EREs	3-4
	3.2.3 Area-Specific PCB Evaluation Procedures	3-5
	3.2.4 Utility Corridor Evaluations	3-5
	3.3 Summary of Appendix IX+3 Constituent Evaluation Procedures.....	3-6
	3.3.1 Applicable Performance Standards.....	3-6
	3.3.2 Overview of Evaluation Process.....	3-7
	3.4 Performance Standards for Natural Resource Restoration/Enhancement Activities	3-8
Section	4. Summary of PCB and Appendix IX+3 Evaluation Results.....	4-1
	4.1 General	4-1
	4.2 Overall Summary	4-2
	4.2.1 PCB Evaluation Summary	4-2
	4.2.2 Utility-Related PCB Information.....	4-4
	4.2.3 Appendix IX+3 Evaluation Summary.....	4-5
Section	5. Design Information.....	5-1
	5.1 General	5-1
	5.2 Technical Specifications	5-1
	5.3 Soil Removal Activities	5-2
	5.4 Excavation Stabilization.....	5-3
	5.5 Backfilling Excavations	5-3
	5.6 Engineered Barrier	5-4
	5.7 Natural Resource Restoration/Enhancement Activities.....	5-5
	5.8 Flood Storage Capacity	5-6
	5.9 Applicable or Relevant and Appropriate Requirements	5-7
Section	6. Contractor Selection	6-1

Section	7. Implementation Plan	7-1
7.1	General	7-1
7.2	Project Participants.....	7-1
7.3	Contractor Submittals	7-2
7.4	Site Preparation	7-5
7.4.1	Utility Clearances.....	7-5
7.4.2	Work Area Security.....	7-6
7.4.3	“Clean” Access Area.....	7-7
7.4.4	Survey Control	7-7
7.4.5	Erosion and Sedimentation Control Measures.....	7-8
7.4.6	Surface Preparation.....	7-8
7.5	Construction Activities	7-8
7.5.1	Monitoring Well Decommissioning	7-8
7.5.2	Soil Removal, Material Handling, and Transportation and Disposal.....	7-10
7.5.3	Groundwater Management.....	7-12
7.5.4	Transport and Disposition of Excavated Materials and Remediation-Derived Waste.....	7-12
7.5.5	Backfilling of Excavations	7-14
7.5.6	NAPL Collection and Monitoring System	7-14
7.5.7	Placement of Engineered Barrier	7-15
7.5.8	Installation of Excavation Controls	7-16
7.5.9	Equipment Cleaning	7-16
7.5.10	Restoration of Disturbed Vegetation	7-17
7.6	Perimeter Air Monitoring	7-17
Section	8. Post-Construction Activities	8-1
8.1	General	8-1
8.2	Project Closeout – Pre-Certification Inspection and Completion Report.....	8-1
8.3	Post-Removal Site Control Activities.....	8-2
8.4	Additional Activities Relating to Properties with Conditional Solutions	8-2
Section	9. Schedule	9-1

Figures

- 1-1 Removal Action Area
- 1-2 Site Plan
- 7-1 Proposed Primary and Secondary Travel Routes for Excavated Materials to Building 71 OPCA

Attachments

- A Technical Drawings
- B Technical Specifications
- C Flood Storage Capacity Calculations
- D Contractor Submittal Tracking Form
- E Ambient Air Monitoring Program
- F Post-Removal Site Control/Restoration
Project Monitoring and Maintenance Plan
- G Figure 1 of Consent Decree Modification (March 31, 2005)

1. Introduction

1.1 General

On October 27, 2000, a Consent Decree (CD) executed by the General Electric Company (GE), the United States Environmental Protection Agency (EPA), the Massachusetts Department of Environmental Protection (MDEP), and several other government agencies was entered by the United States District Court for the District of Massachusetts. The CD requires (among other things) the performance of Removal Actions to address polychlorinated biphenyls (PCBs) and other hazardous constituents present in soils, sediment, and groundwater in several Removal Action Areas (RAAs) located in or near Pittsfield, Massachusetts. These RAAs are part of the GE-Pittsfield/Housatonic River Site. For each Removal Action, the CD and accompanying *Statement of Work for Removal Actions Outside the River* (SOW) (Appendix E to the CD) establish Performance Standards that must be achieved, as well as specific work plans and other documents that must be prepared to support the Removal Actions for each RAA. For most of the Removal Actions, these work plans/documents include the following: Pre-Design Investigation Work Plan, Pre-Design Investigation Report, Conceptual Removal Design/Removal Action (RD/RA) Work Plan, and Final RD/RA Work Plan.

For the Lyman Street Area RAA, considered one of the Former Oxbow Areas under the CD and SOW, GE has previously submitted the following documents to satisfy those requirements of the CD and SOW:

- *Pre-Design Investigation Work Plan for the Lyman Street Area Removal Action* (PDI Work Plan) (March 2002);
- A letter from GE to EPA titled *Supplemental Information Letter* (July 2002) (Supplemental Information Letter);
- *Pre-Design Investigation Report for the Lyman Street Area Removal Action* (April 2003) (PDI Report);
- A letter from GE to EPA titled *Supplemental Pre-Design Soil Investigations* (August 2003) (Supplemental PDI Report);
- A letter from GE to EPA titled *Additional Supplemental Pre-Design Soil Investigations* (September 2003);
- A letter from GE to EPA titled *Additional Supplemental Pre-Design Investigation Report* (October 2003);

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- *Conceptual Removal Design/Removal Action Work Plan for the Lyman Street Area* (Conceptual Work Plan) (March 2004);
 - A letter from GE to EPA titled *Supplement to Conceptual Removal Design/Removal Action Work Plan* (January 2005); and
 - *Conceptual Removal Design/Removal Action Work Plan Addendum for the Lyman Street Area* (Work Plan Addendum) (May 2005).

The Conceptual Work Plan submitted to EPA in March 2004 presented: (1) evaluations of the PCB and non-PCB constituents listed in Appendix IX of 40 CFR 264 (excluding pesticides and herbicides), plus benzidine, 2-chloroethyl vinyl ether, and 1,2-diphenylhydrazine (Appendix IX+3) data under existing conditions to assess the need for soil-related removal actions; (2) a conceptual proposal for soil-related removal actions, where necessary; and (3) evaluations of PCBs and other Appendix IX+3 constituents in soil under post-remediation conditions (where relevant) to demonstrate that the proposed removal actions will achieve the applicable Performance Standards under the CD and SOW.

In a letter dated January 10, 2005, EPA conditionally approved the Conceptual Work Plan and directed GE to prepare a supplement to the work plan to address several comments. One of those comments required GE to conduct a new evaluation of the outdoor area (Sub-Area 201A) adjacent to the existing day-care operations within a portion of the building located on Parcel I9-4-201 (this parcel was identified as a commercial area in the Conceptual Work Plan) because of a change in use of that outdoor area. Specifically, EPA directed GE to evaluate Sub-Area 201A as a separate averaging area from the rest of that parcel, and to conduct that evaluation in accordance with the Performance Standards established in the CD and SOW for residential properties. In addition, as part of these evaluations, EPA noted that the boundary between Sub-Area 201A and the remainder of Parcel I-94-201 should be slightly adjusted, and EPA directed GE to submit a proposal for the collection of supplemental soil samples at Sub-Area 201A (as revised) consistent with the requirements for sampling at residential areas. On January 28, 2005, GE submitted the supplement to the Conceptual Work Plan and included a figure showing the revised boundaries of Sub-Area 201A (as shown on Figure 1-2 hereto) and a proposal for additional soil sampling. That supplement also addressed the other comments in EPA's conditional approval letter (January 10, 2004) that pertained to certain other parcels in the Lyman Street Area (i.e., Parcels 19-4-14, I9-4-19, and I9-8-1). The supplement also proposed that GE would submit an addendum to the Conceptual Work Plan presenting the results from the sampling and revised RD/RA evaluations and soil removal limits based on the additional data.

In a letter dated February 10, 2005, EPA approved the supplement to the Conceptual Work Plan and directed GE to submit the Work Plan Addendum. The Work Plan Addendum was submitted on May 9, 2005. On June 2, 2005, EPA issued a letter to GE approving the Work Plan Addendum and requiring submittal of the Final RD/RA Work Plan by September 2, 2005.

This *Final RD/RA Work Plan for the Lyman Street Area* (Final Work Plan) presents a summary of the pre-design investigation activities performed at the Lyman Street Area RAA, a summary of PCB and Appendix IX+3 evaluation procedures and results, design information, an implementation plan, a discussion regarding Contractor selection, details regarding post-construction activities, and information regarding the anticipated time frame for construction activities. Additional details regarding the specific components of this Final Work Plan are provided in Section 1.3.

1.2 Description of the Lyman Street Area

The Lyman Street Area RAA occupies an area of approximately 17.5 acres. As shown on Figures 1-1 and 1-2, this area is generally bounded by the Housatonic River to the south, East Street and several commercial properties to the north, the East Street Area 2-South RAA to the East, and Cove Street to the west. Certain portions of this area originally consisted of land associated with certain oxbows and low-lying areas of the Housatonic River. Rechannelization and straightening of the Housatonic River in the early 1940s by the City of Pittsfield and the United States Army Corps of Engineers separated several of these oxbows and low-lying areas from the active course of the river. These oxbows and low-lying areas were subsequently filled with various materials from a variety of sources, resulting in the current surface elevations and topography.

The Lyman Street Area is composed of the following 8 properties:

- Parcel I9-4-14;
- Parcel I9-4-19;
- Parcel I9-4-25;
- Parcel I9-4-201;
- Parcel I9-4-202;
- Parcel I9-4-203;

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- Parcel I9-8-1; and
 - Parcel I9-8-2.

Each of these properties is identified on Figure 1-2. Parcel I9-8-1 is owned by GE and includes the GE Lyman Street Parking Lot. The remaining parcels are owned by other parties. Parcels I9-4-14 and I9-4-19 are commonly owned by a single owner. Parcels I9-4-25, I9-4-202, and I9-4-203 are under the common ownership of a single owner as well. For purposes of the RD/RA evaluations previously conducted, a portion of the unpaved Cove Street extension and right-of-way adjacent to Parcel I9-4-14, which is part of this RAA as shown on Figure 1-2, is considered to be a part of Parcel I9-4-14. Parcel I9-8-2 is owned by Western Massachusetts Electric Company (WMECo) and consists of an undeveloped corridor for overhead high-voltage electrical transmission lines.

As shown on Figure 1-2, the properties within the Lyman Street Area have been divided into a number of separate “averaging areas” for the purposes performing RD/RA evaluations. Parcels I9-4-14 and I9-4-19 are each divided into a commercial averaging area and a smaller recreational averaging area located near the riverbank. As approved by EPA, the commercial portion of Parcel I9-4-25 was combined with Parcel I9-4-202, which is also in commercial use and is commonly owned with Parcel I9-4-25, and evaluated as a single commercial property. The bulk of Parcel I9-4-203 is evaluated as a commercial averaging area. A small section in the southwestern corner of Parcels I9-4-25 and I9-4-203, adjacent to the riverbank, was evaluated as a separate recreational area (designated Recreational Area R1). The bulk of Parcel I9-4-201 is a single averaging area in commercial use, but a portion of that parcel, designated Sub-Area 201A was evaluated as a separate residential averaging area due to the planned change in use of that area to an outdoor playground. Finally, the undeveloped WMECO property (Parcel I9-8-2) is evaluated as a recreational area.

Under the CD and SOW, as further described below, the paved former GE Lyman Street parking lot area located was to be subject to installation of an vegetative engineered barrier, and hence was not subject to RD/RA soil evaluations for PCBs and other Appendix IX+3 constituents. However, the CD and SOW do not require a barrier in discrete portions of that area where the average PCB concentrations are below the Performance Standards for recreational areas, so long as the effectiveness of the barrier is not impaired by discontinuities in the barrier and so long as any pavement in those areas was replaced with a native grassland community, as necessary to meet the applicable resource restoration/enhancement Performance Standards. GE evaluated the northern portion of that parcel as a separate averaging area and determined that the area could be remediated to meet the Performance Standards for recreational areas with an ERE. Therefore, GE proposed to conduct soil

removal/replacement activities at the northern portion of Parcel I9-8-1 in certain areas in lieu of extending the vegetative engineered barrier into the northern portion of this parcel. EPA approved that proposal. Furthermore, pursuant to the Third Modification of Consent Decree approved by the United States District Court for the District of Massachusetts on March 31, 2005 (CD Modification), GE is not required to implement natural resource restoration/enhancement activities at the GE parking lot in the northern portion of Parcel I9-8-1 to the extent shown in Figure 1 of the CD Modification (Attachment G). GE will implement a number of natural resource restoration/enhancement activities at the paved southern portion of Parcel I9-8-1 in accordance with the Performance Standards and other requirements set forth in the CD and SOW, as well as at the areas of the northern portion of Parcel I9-8-1 not covered by the CD Modification.

Finally, for properties adjacent to the Housatonic River (each of the parcels listed above except I9-4-202), only the non-riverbank portions of these properties are included in the Lyman Street Area RAA. As shown on Figure 1-2, the riverbank portions of these properties have been addressed by a separate Removal Action under the CD. The riverbank portion east of the Lyman Street Bridge at the site was addressed by GE as part of the Upper ½ Mile Reach Removal Action. The riverbank portion west of the Lyman Street Bridge at the site was addressed by EPA as part of the 1½ Mile Reach Removal Action.

1.3 Contents of Final Work Plan

Section 3.4 of the SOW contains specific requirements regarding the information required in Final Work Plans, including:

- Results of pre-design studies/investigations;
- An evaluation of the areas and depths subject to removal actions to meet the PCB-related Performance Standards set forth in the SOW;
- An evaluation of the need for additional removal actions to address non-PCB constituents and (if needed) the type of such removal actions;
- A further description of the activities necessary to meet the Performance Standards for natural resource restoration/enhancement activities;
- An evaluation of other issues that may affect the type and extent of removal actions (e.g., groundwater, non-aqueous phase liquid [NAPL]);
- Design assumptions and parameters;

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- Identification of Applicable or Relevant and Appropriate Requirements (ARARs) in accordance with Attachment B of the SOW;
 - Detailed design of the removal actions;
 - Description of other implementation details concerning performance of the removal actions;
 - Summary of anticipated Post-Removal Site Control activities following completion of the Removal Action;
 - Identification of the Removal Action team, including key personnel, roles and responsibilities, and lines of authority;
 - Process for selection of Removal Action Contractor (if not already selected);
 - Schedule for implementation of Removal Action;
 - Construction Quality Assurance Plan (CQAP); and
 - Project closeout requirements.

1.4 Scope and Format of Work Plan

To satisfy the requirements identified above, the remainder of this Final Work Plan is presented in eight sections. The title and a brief overview of each section are presented below:

Section 2 – Summary of Pre-Design Investigation Activities, describes the pre-design soil investigation activities conducted by GE at the Lyman Street Area, the results of which were used to determine the need for and extent of removal actions to address PCBs and Appendix IX+3 constituents in soil at the eight properties located within this RAA.

Section 3 – Summary of PCB and Appendix IX+3 Evaluation Procedures, provides an overview of the applicable PCB and Appendix IX+3 Performance Standards for commercial, recreational, and residential properties, and describes the procedures used to evaluate these constituents in soil at these properties under existing and, where necessary, post-remediation conditions.

Section 4 – Summary of PCB and Appendix IX+3 Evaluation Results, presents an overall summary of the PCB and Appendix IX+3 evaluations for the properties located within the Lyman Street Area, as presented in the Conceptual Work Plan and Work Plan Addendum, as well as the removal actions proposed to achieve the

Performance Standards (i.e., soil removal/replacement and/or the installation of engineered barriers, as necessary) for each property.

Section 5 – Design Information, describes additional design-related information associated with the removal actions identified in Section 4. Such information includes technical plans and specifications, technical drawings, information regarding performance of soil removal activities and installation of engineered barriers, an evaluation of the potential impacts of the proposed engineered barriers on flood storage capacity of the 100-year floodplain in this area, a description of natural resource restoration/enhancement activities, identification of site-specific ARARs, and a description of the procedures to be implemented to ensure attainment of those ARARs.

Section 6 – Contractor Selection, discusses the anticipated process for selecting the Remediation Contractor.

Section 7 – Implementation Plan, discusses certain site-specific implementation components, including identification of the project participants, Contractor submittal requirements, project-specific site preparation and construction-related components, and the perimeter air monitoring approach. As also discussed in this section, there remains certain implementation-related logistics that are currently unknown and will be provided to EPA in a supplemental information package once EPA has completed its use of this area for activities associated with the Upper 1½ -Mile Removal and a Remediation Contractor has been selected.

Section 8 – Post-Construction Activities, identifies the various activities to be performed following implementation of removal actions, including project closeout activities (i.e., pre-certification inspection and preparation of a Final Completion Report) and Post-Removal Site Control activities.

Section 9 – Schedule, identifies the schedule for submittal of a supplemental information package to support this Final Work Plan, as well as the anticipated schedule for construction and reporting activities.

The discussions in the above-referenced sections are supported by tables, figures, and other evaluations presented in several attachments, as described in subsequent sections of this Final Work Plan.

Finally, it should be noted that this Final Work Plan evaluates the need for and scope of removal actions to achieve the soil-related Performance Standards set forth in the CD and SOW. Groundwater at the Lyman Street Area, as well as NAPL in groundwater, are being addressed as part of GE's groundwater-related activities for

the Plant Site 1 Groundwater Management Area (GMA 1) pursuant to the CD and SOW. At the present time, these activities consist of the performance of an interim groundwater monitoring program, along with continuation of groundwater/NAPL recovery operations. This Final Work Plan does, however, include a discussion of the ways in which the NAPL recovery program will be coordinated with the proposed removal actions described herein.

2. Summary of Pre-Design Investigation Activities

2.1 General

The removal actions presented in this Final Work Plan are based on the results of pre-design investigation activities performed by GE and EPA at the Lyman Street Area. Since Section 2 of the Conceptual Work Plan provided a detailed description of the pre-design investigation activities, as well as the corresponding data tables presenting the results of those investigations, only a summary of those investigations is provided herein.

2.2 Summary of Pre-Design Soil Investigations

The pre-design investigation activities for the Lyman Street Area RAA consisted of the following:

- Historical soil investigations prior to August 2002 and not associated with the pre-design investigation activities proposed in GE's PDI Work Plan (March 2002) and Supplemental Information Letter (July 2002).
- Pre-design activities conducted by GE between August 2002 and December 2003, generally including the collection and analysis of soil samples for analysis of PCBs, and for certain of those samples, other Appendix IX+3 constituents. Also, as discussed above, additional soil samples were collected in February 2005 as part of the investigation and evaluation of Sub-Area 201A, which includes the daycare facility, according to residential Performance Standards.
- Investigation activities conducted by EPA at the Lyman Street Area during GE's pre-design investigations as well as on prior occasions. The validated results of these EPA analyses were provided to GE as part of a data exchange agreement between GE and EPA. These data have also been considered in the removal action evaluations for this RAA (excluding the sample results rejected in EPA's data validation process).

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- Performance of a detailed site survey, including paved and unpaved areas, surface elevations and topography, property boundaries and easements, certain utilities (e.g., manholes, catch basins, etc.), soil sample locations, and other site features. The results of the detailed site survey were incorporated into the figures presented in the Conceptual Work Plan.

Results of the pre-design activities listed above were the basis for the PCB and Appendix IX+3 evaluations presented in the Conceptual Work Plan. The corresponding data summary tables providing the results of soil sampling activities were provided in Appendix B of the Conceptual Work Plan. PCB and Appendix IX+3 results for the additional pre-design soil sampling at Sub-Area 201A to support evaluation according to residential Performance Standards were presented in Appendix B of the Work Plan Addendum and evaluated in that document.

3. Summary of PCB and Appendix IX+3 Evaluation Procedures

3.1 General

This section of the Final Work Plan summarizes the procedures used by GE to determine the need for soil-related removal actions to achieve the PCB and other Appendix IX+3 Performance Standards specified in the SOW. This section provides an overview of the evaluation procedures for PCBs (Section 3.2) and other Appendix IX+3 constituents (Section 3.3). In addition, it includes a summary of the Performance Standards under the CD and SOW related to natural resource restoration/enhancement activities within the Lyman Street Area (Section 3.4).

3.2 Summary of PCB Evaluation Procedures

This section provides an overview of the PCB evaluation procedures for the Lyman Street Area, including: (1) a description of the applicable PCB-related Performance Standards for this RAA; (2) the current status regarding the obtaining of Grants of Environmental Restrictions and Easements (EREs) for the properties located in the Lyman Street Area; (3) an overview of PCB evaluation procedures for each averaging area; and (4) an overview of the utility corridor PCB evaluation procedures.

3.2.1 PCB-Related Performance Standards

For the Former Oxbow Areas, which include the Lyman Street Area, the Performance Standards related to the presence of PCBs in soil are set forth in Paragraph 26 of the CD and Section 2.3.2 of the SOW. In addition, subsequent to entry of the CD, GE and EPA reached an agreement, embodied in a letter from GE to EPA dated July 16, 2001, concerning the scope of removal actions that will be conducted for the GE-owned Lyman Street Parking Lot, consistent with the Performance Standards contained in the CD and SOW for that area. In light of that agreement, the pertinent Performance Standards related to the presence of PCBs in soil at Lyman Street Area are summarized as follows:

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- GE must execute and record EREs for the GE-owned property (Parcel I9-8-1) at the Lyman Street Area. In addition, GE must make “best efforts” (as defined in the CD) to obtain EREs at properties not owned by GE within the RAA. If an ERE cannot be obtained at non-GE-owned property, GE must implement a Conditional Solution. The Performance Standards for each of the properties in Lyman Street Area are dependent on whether an ERE is obtained or a Conditional Solution will be implemented, as discussed below.
 - For the GE-owned Lyman Street Parking Lot, GE shall install a 1-foot vegetative engineered barrier over the existing pavement/soil, except that such a barrier is not needed in discrete portions of this area where the average PCB concentrations are below the Performance Standards for recreational areas (10 parts per million [ppm] in the top foot, 15 ppm in the 1- to 3-foot depth increment, and 100 ppm in the top 15 feet), so long as the effectiveness of the barrier is not impaired by discontinuities in the barrier and any pavement in those areas is replaced with a native grassland community to meet the applicable natural resource restoration/enhancement Performance Standards. Pursuant to the CD Modification and as discussed above, natural resource restoration/enhancement activities are not required in the area shaded on Figure 1 of the CD Modification (Appendix G). In addition, GE must obtain adequate flood storage compensation (as defined in the CD) for the barrier installed over the parking lot area (described in Section 5.8).
 - For the commercial averaging areas (which include all or portions of Parcels I9-4-14, I9-4-19, I9-4-25, I9-4-201, I9-4-202, and I9-4-203), GE must achieve the following standards:
 - For areas where an ERE is obtained, if the spatial average PCB concentration in the top foot of soil in the unpaved portion of the area exceeds 25 ppm, GE must remove and replace soils as necessary to achieve that average concentration in such portion. For the paved portion of the area, if the spatial average PCB concentration exceeds 25 ppm in the top foot of soil, GE must either remove and replace soils as necessary to achieve that spatial average concentration or enhance the pavement in such portion in accordance with the specifications for pavement enhancement in the SOW. In addition, considering both paved and unpaved portions together, GE must remove/replace soils as necessary to achieve a spatial average PCB concentration of 200 ppm in the 1- to 6-foot depth increment and must install an engineered barrier if the remaining spatial average PCB concentration in the 0- to 15-foot depth increment exceeds 100 ppm.

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- For areas where an ERE cannot be obtained, GE must implement a Conditional Solution, which includes soil removal/replacement as necessary to achieve spatial average PCB concentrations of 25 ppm in both the top foot of soil (considering paved and unpaved portions together) and the top 3 feet of soil and 200 ppm in the 1- to 6-foot depth increment, and installation of an engineered barrier if the remaining spatial average PCB concentration in the 0- to 15-foot depth increment exceeds 100 ppm.
 - For recreational areas (which consist of all or portions of Parcels I9-4-14, I9-4-19, I9-8-1, I9-8-2, Recreational Area R1), GE must achieve the following standards:
 - For areas where an ERE is obtained, GE must remove/replace soils as necessary to achieve spatial average PCB concentrations of 10 ppm in the top foot and 15 ppm in the 1- to 3-foot depth increment, and must install an engineered barrier if the remaining spatial average PCB concentration in the 0- to 15-foot depth increment exceeds 100 ppm.
 - For areas where an ERE cannot be obtained, GE must implement a Conditional Solution, which includes soil removal/replacement to achieve a spatial average PCB concentration of 10 ppm in both the top foot and top 3 feet of soil, and installation of an engineered barrier if the remaining spatial average PCB concentration in the 0- to 15-foot depth increment exceeds 100 ppm.
 - Further, at each of the above areas that exceeds 0.5 acre in size, if GE elects to consider the entire area as an averaging area, GE must ensure the removal of all soil in the top foot in unpaved portions of those areas that contain PCB concentrations greater than 125 ppm at commercial areas and 50 ppm at recreational areas – the “not-to-exceed” (NTE) level. Alternatively, GE may establish averaging areas that do not exceed 0.5 acre in size or may propose other specific averaging areas to EPA for approval, in which case the above NTE level will not apply.
 - As discussed above, Sub-Area 201A was evaluated in accordance with residential Performance Standards due to the planned construction of an outdoor playground within that area. For residential areas, GE must achieve the following Performance Standards:

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- GE is required to calculate spatial average PCB concentrations for the 0- to 1-foot and 1- to X-foot depth increments, where X equals the depth at which PCBs have been detected (down to a maximum of 15 feet). If the spatial average PCB concentration in the 0- to 1-foot or 1- to X-foot depth increment exceeds 2 ppm, GE must remove and replace soils as necessary to achieve a spatial average PCB concentration at or below 2 ppm in each of those depth increments. In addition, for any residential parcel that exceeds 0.25 acre in size, GE must remove all soils containing PCB concentrations greater than 10 ppm from the top foot in unpaved portions of such parcel.
 - In addition, at all areas where subgrade utilities potentially subject to emergency repair requirements are present, if the spatial average PCB concentration in the utility corridor exceeds 200 ppm, GE must evaluate whether any additional response actions are necessary. Further, if subgrade utilities are installed, repaired, or replaced, GE must ensure that the spatial average PCB concentration in the backfill material is less than 25 ppm in commercial areas and less than 10 ppm in the top 3 feet and 25 ppm at greater depths for recreational areas.

3.2.2 Status of EREs

As discussed above, the Lyman Street Area is comprised of 8 properties. Parcel I9-8-1 is owned by GE, and under the provisions set forth in the CD, GE will execute an ERE after completion of the removal actions. In response to condition number 4 of EPA's January 10, 2005 conditional approval letter, GE confirms that its ERE will cover the entirety of Parcel I9-8-1.

The remaining parcels at the Lyman Street Area are privately owned, with Parcel I9-8-2 owned by a utility company; Parcels I9-4-14 and I9-4-19 owned in common by a single owner; Parcels I9-4-25, I9-4-202, and I9-4-203 owned in common by a single owner; and Parcel I9-4-201 owned by a separate owner. As described in prior letters from GE to EPA and the Conceptual Work Plan, GE has made "best efforts" (as defined in the CD) to obtain EREs for these parcels. However, all four of the owners of these parcels have advised GE that they do not wish to impose EREs on their properties. Therefore, GE has evaluated each of the non-GE-owned properties and averaging areas at this RAA as properties at which Conditional Solutions will be implemented.

3.2.3 Area-Specific PCB Evaluation Procedures

Section 3.2.3 of the Conceptual Work Plan detailed the general procedures used to evaluate PCB concentrations in soil on an area-specific basis for the properties located within the Lyman Street Area. These procedures were established in Attachment E to the SOW (Protocols for PCB Spatial Averaging), and generally involve the following steps: (1) for areas where NTE levels apply, comparing the discrete PCB concentrations in the top foot of soil in unpaved areas to the applicable NTE levels; (2) comparing the existing spatial average PCB concentrations for the relevant depth increments at each area to the applicable PCB Performance Standards; (3) at areas where there were exceedances of the applicable NTE levels or other Performance Standards, developing a remediation proposal (soil removal or placement of an engineered barrier, as applicable) to address those exceedances; and (4) evaluating those areas in their post-remediation condition to ensure that the proposed remediation would achieve the Performance Standards. The evaluation results were presented in Section 4 of the Conceptual Work Plan on an area-by-area basis, with supporting documentation (i.e., Theissen polygon maps and averaging tables) provided in Appendix D of that document. A revised evaluation of Sub-Area 201A, a separate evaluation of the commercial portion of Parcel I9-4-201, and a revised evaluation of Parcel I9-4-203 are set forth in the Work Plan Addendum, with supporting documentation provided in Appendix D of that document.

3.2.4 Utility Corridor Evaluations

As discussed in Section 3.2.4 of the Conceptual Work Plan, subsurface utilities potentially subject to emergency repairs were also subject to additional evaluation activities. Specifically, the corridor associated with each such utility was evaluated by calculating the spatial average PCB concentration for each such corridor using the procedures described in Section 3.2.4 of the Conceptual Work Plan. As specified in Section 3.2.1 above, if the spatial average PCB concentration in a utility corridor exceeds 200 ppm, GE must evaluate whether any additional response actions are necessary. However, as discussed in Section 4.13 of the Conceptual Work Plan, there are no PCB concentrations greater than 200 ppm in any of the individual samples collected within or near the utility corridors. As a result, further evaluations (i.e., performance of spatial averaging) were not necessary, and it could be concluded that existing conditions already achieve the applicable Performance Standards for this evaluation.

3.3 Summary of Appendix IX+3 Constituent Evaluation Procedures

This section provides an overview of the applicable Performance Standards for non-PCB Appendix IX+3 constituents in soil and the procedures used to assess achievement of those standards. As with PCBs, the other Appendix IX+3 constituents were evaluated first for each evaluation area in its existing condition. For each evaluation area where the applicable Performance Standards are not met, removal actions were proposed and the anticipated post-remediation conditions were evaluated to ensure achievement of the Performance Standards.

3.3.1 Applicable Performance Standards

The applicable Performance Standards for non-PCB Appendix IX+3 constituents in soil at Lyman Street Area are included in Section 2.3.2 of the SOW. These standards include the following:

- For dioxins/furans, total Toxicity Equivalency Quotient (TEQ) concentrations must be calculated using the Toxicity Equivalency Factors (TEFs) developed by the World Health Organization (WHO) (van den Berg J. et al., Environ. Health Perspectives, Vol. 106, No. 12, Dec. 1998). Either the maximum TEQ concentration or the 95% Upper Confidence Limit on the mean (95% UCL) of the TEQ data must be below certain Preliminary Remedial Goals (PRGs) developed or approved by EPA for dioxin/furan TEQs. These PRGs are: for commercial areas, 5 parts per billion (ppb) in the top foot and 20 ppb in subsurface soil; for recreational areas, 1 ppb in the top foot and 1.5 ppb in the 1- to 3-foot depth interval, and for residential areas, 1 ppb. In addition, EPA previously requested, in a May 24, 2002 comment letter on the Conceptual Work Plan for Newell Street Area I, that GE also compare the maximum or 95% UCL TEQ concentrations to the following TEQ criteria, although these are not Performance Standards specified in the CD or SOW: 5 ppb for the 0- to 3-foot depth increment at commercial areas that will not have EREs; 1 ppb for the 0- to 3-foot depth increment at recreational areas that will not have EREs, and 20 ppb for soils below 3 feet at all recreational areas.
- For other non-PCB Appendix IX+3 constituents, any combination of the following must be achieved: (1) maximum concentrations of individual constituents that do not exceed the Screening PRGs established or approved by EPA (discussed below); or (2) for the remaining constituents, average concentrations that either: (a) do not exceed the applicable MCP Method 1 soil standards (or Method 2 standards, if developed); or (b) are shown through an area-specific risk evaluation to have cumulative

risk levels that do not exceed (after rounding) an Excess Lifetime Cancer Risk (ELCR) of 1×10^{-5} and a non-cancer Hazard Index (HI) of 1.

3.3.2 Overview of Evaluation Process

The initial task performed in the evaluation of non-PCB Appendix IX+3 constituents in soil at the Lyman Street Area was to assess such constituents in soil at each averaging area under existing conditions, based on all available Appendix IX+3 data collected from that area, without considering PCB-related remediation. This assessment consisted of several steps:

- First, a screening step was conducted, which generally involved comparison of the maximum concentrations of all detected constituents (other than dioxin/furan TEQs) to the applicable PRGs developed by EPA Region 9 (as set forth in Exhibit F-1 to Attachment F of the SOW) or certain surrogate PRGs approved by EPA. Additional details regarding this screening step were provided in Section 3.3.3 of the Conceptual Work Plan.
- Second, for dioxin/furan TEQs, the maximum concentration or the 95% UCL (whichever is lower) at each area and relevant depth increment was compared to the applicable dioxin/furan PRG described above (as well as those additional criteria requested by EPA, where appropriate). Additional details regarding this evaluation step were provided in Section 3.3.4 of the Conceptual Work Plan.
- Third, for those constituents (other than dioxin/furan TEQs) that were not screened out in Step 1, the existing average concentrations of each such constituent were calculated for the same depth increments used for the PCB evaluations. These average concentrations were then compared to the MCP Method 1 soil standards for such constituents. Additional details regarding this evaluation step were provided in Section 3.3.5 of the Conceptual Work Plan. Further, in the evaluations of Sub-Area 201A, the commercial portion of Parcel I9-4-201, and Parcel I9-4-203 conducted in the Work Plan Addendum, those constituents (other than dioxin/furan TEQs) that were not screened out in Step 1 were compared to MDEP's "Wave 2" Method 1 soil standards, which are expected to be finalized prior to the implementation of the removal actions at the Lyman Street Area. In addition, in the Work Plan Addendum GE also reviewed the results of its previous evaluations to determine whether application of the Wave 2 Method 1 soil standards would change the outcome of any of the prior evaluations of non-

PCB constituents at any of the other evaluation areas within the Lyman Street Area that had been evaluated using the existing Method 1 soil standards. GE concluded that the application of the Wave 2 standards to those areas would not change the outcome of any of the non-PCB evaluations or the proposed remediations set forth in the Conceptual Work Plan.

- Fourth, for averaging areas where there were exceedances of the Method 1 soil standards in any depth increment but such exceedances were not significantly above the Method 1 soil standards, an area-specific risk evaluation was conducted for the same constituents evaluated in Step 3 and in accordance with the procedures specified in the SOW for such evaluations. Additional details regarding this evaluation step were provided in Section 3.3.6 and Appendix G of the Conceptual Work Plan.

At averaging areas where the evaluations indicated the need for additional remediation to address non-PCB Appendix IX+3 constituents in soil, a soil removal/replacement proposal was developed. Such areas generally consisted of those areas with exceedances of dioxin/furan TEQ PRGs or with significant exceedances of Method 1 soil standards such that an area-specific risk evaluation under existing conditions was not deemed warranted. For such areas, an evaluation was then conducted of post-remediation conditions. This evaluation consisted of repeating Steps 2 through 4 of the above-described process, as necessary, to demonstrate that the proposed removal actions will achieve the applicable Performance Standards for non-PCB Appendix IX+3 constituents.

3.4 Performance Standards for Natural Resource Restoration/Enhancement Activities

Attachment I to the SOW sets forth the Performance Standards and other requirements for the natural resource restoration/enhancement activities at the Lyman Street Area. These Performance Standards and requirements apply to the GE Lyman Street Parking Lot other than the area subject to the CD Modification and the unpaved part of the northern portion of Parcel I9-8-1. Specifically, the Performance Standards for this area are as follows:

- GE shall plant an herbaceous native grassland community on the surface of the vegetative engineered barrier using a mixture of native grass and wildflower species. In addition, this same type of grassland community will be established by GE at the unpaved part of the northern portion of this same parcel.

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- In addition to the vegetative enhancements, GE shall place uncontaminated stumps and rock piles randomly throughout this vegetated area to provide habitat for fossorial and ground-dwelling wildlife. Further, GE shall place bluebird boxes along the edge of the former parking lot area adjacent to the Housatonic River with a minimum of 300 yards between boxes.

Attachment I to the SOW sets forth more specific requirements relating to these activities. Plans for implementing these natural resource restoration/enhancement activities following installation of the vegetative engineered barrier are described in Section 5.7.

4. Summary of PCB and Appendix IX+3 Evaluation Results

4.1 General

Section 4 of the Conceptual Work Plan and Work Plan Addendum presented the results of the area-specific PCB and Appendix IX+3 evaluations which were performed in accordance with the evaluation procedures summarized in Section 3 of the Conceptual Work Plan. The Conceptual Work Plan (as supplemented by the Work Plan Addendum) presented the following information for each averaging area located within the Lyman Street Area:

- Description of area and identification of applicable Performance Standards;
- Evaluation of existing conditions with respect to PCBs and discussion of the need for removal actions to address PCBs;
- Evaluation of existing conditions with respect to other Appendix IX+3 constituents and discussion of the need for removal actions to address these constituents;
- Description of proposed removal actions (as shown on Figure 4-1 of the Conceptual Work Plan and Figure 3-1 of the Work Plan Addendum);
- Evaluation of post-remediation conditions with respect to PCBs; and
- Evaluation of post-remediation conditions with respect to other Appendix IX+3 constituents, where required.

The Conceptual Work Plan also presented utility corridor evaluations for PCBs. Finally, the Conceptual Work Plan and Work Plan Addendum presented an overall summary of the removal actions for the Lyman Street Area, including the soil removal volumes and engineered barrier installation areas.

In support of the PCB and Appendix IX+3 evaluations, the Conceptual Work Plan and Work Plan Addendum included backup documentation for the evaluations. Specifically, the spatial averaging tables and Theissen polygon maps developed in support of the area-specific PCB evaluations were presented in Appendix D of those documents. Appendix E of those documents contained the evaluation tables developed in support of the Appendix IX+3 evaluations and Appendix F of those documents presented the area-specific risk evaluations.

4.2 Overall Summary

Based on the evaluations presented in Section 4 of the Conceptual Work Plan and Section 3 of the Work Plan Addendum, removal actions consisting of soil removal/replacement at each of the 8 parcels was proposed by GE and approved by EPA. In addition, GE will install a vegetative engineered barrier and perform natural resource restoration/enhancement activities at one parcel in accordance with the requirements of the CD and SOW.

4.2.1 PCB Evaluation Summary

Table 4-1 below lists the post-remediation average PCB concentration for each depth increment subject to evaluation at each averaging area, as presented in the Conceptual Work Plan and Work Plan Addendum, as well as the applicable PCB Performance Standard for that depth increment. It should be noted that the post-remediation average PCB concentrations presented in Table 4-1 for Parcel I9-4-19 are those previously reported in the Conceptual Work Plan and have not been revised to incorporate the additional removals performed voluntarily by GE, as discussed in the Work Plan Addendum. These evaluations were not revised since the post-remediation concentrations for that property specified in the Conceptual Work Plan already satisfied the applicable PCB Performance Standards and revising these evaluations to incorporate the performance of additional removal actions performed voluntarily by GE would only further lower the applicable post-remediation average PCB concentrations.

Table 4-1 also lists the currently estimated volume of soil removal at each averaging area and the estimated area of the engineered barrier.

TABLE 4-1
FINAL AVERAGE PCB CONCENTRATIONS AND ESTIMATED SOIL REMOVAL VOLUMES/ENGINEERED BARRIER AREA

Parcel	Final Average PCB Concentration (ppm)	PCB Performance Standard (ppm)	Estimated Soil Removal Volume (cubic yards)	Estimated Engineered Barrier Area (sq. ft.)
I9-4-14 (Commercial)			0	0
0 – 1'	1.26	25		
0 – 3'	1.78	25		
1 – 6'	1.07	200		

Parcel	Final Average PCB Concentration (ppm)	PCB Performance Standard (ppm)	Estimated Soil Removal Volume (cubic yards)	Estimated Engineered Barrier Area (sq. ft.)
0 – 15'	0.46	100		
I9-4-14 (Recreational)			267	0
0 – 1'	3.56	10		
1 – 3'	4.19	10		
0 – 15'	1.89	100		
I9-4-19 (Commercial)			328	
0 – 1'	4.84	25		
1 – 3'	3.75	25		
1 – 6'	2.96	200		
0 – 15'	3.09	100		
I9-4-19 (Recreational)			871	0
0 – 1'	5.99	10		
1 – 3'	6.12	10		
0 – 15'	25.36	100		
I9-4-25/ I9-2-202 (Commercial)			10	0
0 – 1'	0.37	25		
0 – 3'	0.79	25		
1 – 6'	0.73	200		
0 – 15'	0.37	100		
I9-4-203 (Commercial)			20	0
0 – 1'	15.94	25		
1 – 3'	17.53	25		
1 – 6'	14.94	200		
0 – 15'	6.72	100		
Recreational Area R1			534	0
0 – 1'	0.23	10		
0 – 3'	0.13	10		
0 – 15'	2.16	100		
I9-4-201 (Commercial)			27	0
0 – 1'	1.14	25		
0 – 3'	3.47	25		
1 – 6'	4.04	200		
0 – 15'	1.69	100		

Parcel	Final Average PCB Concentration (ppm)	PCB Performance Standard (ppm)	Estimated Soil Removal Volume (cubic yards)	Estimated Engineered Barrier Area (sq. ft.)
Sub-Area 201A			1,200	0
0 – 1'	0.25	2		
1 – 15'	1.94	2		
I9-8-1 (Northern Portion)			44	0
0 – 1'	0.77	10		
1 – 3'	0.56	15		
0 – 15'	2.75	100		
I9-8-1 (Southern Portion)			0	133,500
0 – 1'	NA ¹	NA ¹		
1 – 3'				
0 – 15'				
I9-8-2			777	0
0 – 1'	7.02	10		
1 – 3'	7.2	10		
0 – 15'	3.06	100		
Total:			4,078	133,500

Notes:

1. Not applicable. PCB evaluations were not required for the specified area because the GE Lyman Street Parking Lot in the southern portion of this parcel will be subject to installation of an engineered barrier in accordance with the CD and SOW.

As indicated in the above table, the removal actions for the Lyman Street Area will involve excavation of approximately 4,078 cubic yards of soil and the installation of engineered barrier. The area on which the engineered barrier is to be installed is approximately 3 acres.

4.2.2 Utility-Related PCB Information

The soil-related PCB Performance Standards set forth in Paragraph 26 of the CD and Section 2.3.2 of the SOW provide that where subgrade utilities potentially subject to emergency repair requirements are present, if the spatial average PCB concentration in the utility corridor exceeds 200 ppm, GE must evaluate whether any additional response actions are necessary. As discussed in the Conceptual Work Plan and in Section 3.2.4 above, there are no PCB concentrations greater than 200 ppm in any of the individual samples collected within or near the utility corridors. As a result, further evaluations to address utility corridors were not necessary.

4.2.3 Appendix IX+3 Evaluation Summary

As previously indicated, information regarding the post-remediation concentrations of non-PCB Appendix IX+3 constituents and corresponding area-specific risk evaluations (where necessary) is provided in Appendix F and Appendix G, respectively, of the Conceptual Work Plan. The soil removal required to address non-PCB Appendix IX+3 constituents is included in the removal volumes set forth in Section 4.2.1 above.

5. Design Information

5.1 General

This section discusses the removal action that has been identified to meet the applicable Performance Standards established in the CD and SOW for the Lyman Street Area.. These activities generally involve of the removal of soils, disposal of this material at the On-Plant Consolidation Area (OPCA) located at Building 71 within the GE Pittsfield facility, backfilling of excavations with clean material, placement of a 1-foot-thick (minimum) engineered barrier over the existing GE Lyman Street Parking Lot on the southern portion of Parcel I9-8-1, and general site restoration. These and other pertinent components of the construction activities are discussed in the remainder of this section. As discussed in Section 6, GE will select a Remediation Contractor to perform the removal actions proposed herein. Section 6 provides further details regarding that selection process, while Section 7 provides additional site-specific implementation details associated with construction of the various design components.

5.2 Technical Specifications

GE has developed design information for the removal actions and engineered barrier to be installed at the Lyman Street Area RAA. The various design details are summarized in this Final Work Plan, but are more specifically described in the Technical Drawings and Specifications developed by GE for use in selecting a Remediation Contractor. These Technical Drawings and Specifications are provided in Attachments A and B, respectively, and include project-specific construction quality assurance requirements related to soil removal and engineered barrier installation, as well as other construction elements. As discussed further below, it is anticipated that construction of the engineered barrier will be installed after EPA has completed its use of that area; therefore, details regarding the engineered barrier may be subject to modification prior to construction. While the subgrade and final elevations shown in the attached Technical Details and Specification are site-specific, other details that may be subject to future design modification include those related to the NAPL recovery system, access roads, specific anchor trench details, drainage swales and discharges, and the corresponding technical specifications.

Certain of the plans comprising GE's Project Operations Plan (POP) provide additional design, construction, and implementation-related information relevant to the construction activities. With the exception of the FSP/QAPP and the Health and Safety Plan (HASP) (which was provided to EPA for informational purposes only), the latest revisions to the POP were conditionally approved by EPA in a letter dated April 24, 2003, and were submitted to EPA on July 14, 2003.

The POP contains a series of plans that address several common aspects of the Removal Actions Outside the River and apply to various activities to be conducted as part of those Removal Actions, ranging from initial pre-design activities to the performance and completion of remediation activities. Collectively, these plans describe the minimum requirements, general activities, protocols, and methodologies applicable to these Removal Actions. These plans include a Waste Characterization Plan, Soil Cover/Backfill Characterization Plan, Site Management Plan, Ambient Air Monitoring Plan, and a Contingency and Emergency Procedures Plan. The POP also includes a CQAP, which provides technical requirements related to items such as backfill, topsoil, seeding, mulch, engineered barrier components, etc. In addition, the CQAP specifies activities that are relevant to certain of the construction activities, such as soil placement and grading/compaction, survey control, liner/barrier component placement, etc. The general provisions of the POP are applicable to the Lyman Street Area construction activities and are incorporated herein by reference.

5.3 Soil Removal Activities

As described in Section 4.2, GE will remove approximately 4,078 cubic yards of soil from the properties comprising the Lyman Street Area. The removal limits are shown in Technical Drawing 3 in Attachment A. Based on a review of the analytical data located within the limits of removal actions, soils subject to removal will be transported to and properly disposed of at the Building 71 OPCA, as further described in Section 7.5.3. Prior to initiating removal activities for the areas subject to soil removal, the horizontal limits of removal will be surveyed and staked in the field. During removal activities, field measurements will be made to verify that the target removal depths/elevations have been achieved for each excavation area. Following removal, common backfill will be obtained from an off-site source (Sections 5.5 and 7.5.5) and will be placed and compacted to re-establish the original grade and/or the subgrade elevation for an engineered barrier. The provisions specified in the Technical Drawings (Attachment A), Technical Specifications (Attachment B), and the POP (including the Soil Cover/Backfill Characterization Plan and the CQAP) will be utilized during the removal and backfill activities.

5.4 Excavation Stabilization

For removal areas where excavations will exceed 4 feet in depth and where Contractor personnel will enter the excavations to perform work, the Remediation Contractor will be required to evaluate sidewall stability in accordance with Occupational Health and Safety Administration (OSHA) requirements, and implement protective measures, as appropriate. These methods will be identified by the Contractor and may include benching the excavation or installation of a temporary earth-retaining structure (e.g., steel sheetpiles, soldier beam and lagging, trench boxes, etc). For any temporary earth-retaining structure that is planned to be used by the Contractor, a Professional Engineer licensed in the Commonwealth of Massachusetts will design and stamp the system.

5.5 Backfilling Excavations

Soil fill and topsoil and engineered barrier components will be used to backfill the excavations at the Lyman Street Area. Information regarding the measurement, composition, installation, and (for engineered barrier components) construction quality assurance requirements of acceptable backfill materials/barrier components is provided in the Technical Drawings and Specifications provided in Attachments A and B, respectively.

The specific fill sources to be used for this project will be identified by the selected Remediation Contractor. The backfill materials to be used at these properties will originate either from existing or new sources of backfill material. Existing sources of backfill material consist of those sources that have been previously used for other GE remediation projects in Pittsfield and have been previously qualified for such use in submittals to EPA and/or MDEP. The sample data presented in those documents include analyses for PCBs and Appendix IX+3 volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and metals. If such existing, approved sources have been used by GE within the past 18 months, these prior analytical data will not be resubmitted to EPA. For any backfill materials from a source that has not already been identified and characterized, representative samples of proposed fill materials will be collected and analyzed for PCBs and Appendix IX+3 VOCs, SVOCs, and metals, as required by GE's approved Soil Cover/Backfill Characterization Plan provided in the POP. The name of the proposed backfill source location and the results of the analyses for PCBs and Appendix IX+3 VOCs, SVOCs, and metals (if necessary) will be submitted to EPA in a supplemental information package prior to the use of such material.

5.6 Engineered Barrier

As discussed in the Conceptual Work Plan, the engineered barrier will consist of a vegetative engineered barrier that will be installed at the Lyman Street Parking Lot at the southern (main) portion of Parcel I9-8-1. As also discussed in the Conceptual Work Plan, the Lyman Street Parking Lot where the vegetative engineered barrier will be installed is currently being used and will continue to be used as an equipment and materials staging area for the 1½ Mile Reach Removal Action being conducted by EPA. Therefore, it is anticipated that vegetative engineered barrier will not actually be installed until after EPA has completed its use of the area. Accordingly, the final design details for the barrier may be modified and/or supplemented when EPA's use of this area has been completed.

Details concerning the design of the engineered barrier are contained in the attached Technical Drawings and Specifications. The vegetative engineered barrier at the Lyman Street Area will comply with the general requirements for such barriers set forth in Technical Attachment G to the SOW. Pursuant to that technical attachment, the minimum thickness of the engineered barrier to be placed in the GE Lyman Street parking lot area is 1 foot. This minimum thickness will be installed/achieved within all areas in which engineered barriers are to be constructed; however, in several areas, the thickness of the engineered barrier will be greater than 1 foot in order to accommodate the variability in the current topography of the area and to provide a final surface that is fairly level but promotes drainage of rainfall runoff (i.e., a downward slope of approximately 1.5% to 2%), as shown by the targeted final grade contours on Technical Drawing 5B.

The total extent of the engineered barrier to be placed within the Lyman Street Area encompasses is approximately 133,500 square feet (sq. ft.) at the southern portion of Parcel I9-8-2. In addition, natural resource restoration/enhancement activities will be performed over the engineered barrier. Further, the natural resource restoration/enhancement will occur over the unpaved area of the northern part of Parcel I9-8-2 in accordance with the CD and SOW. The scope of natural resource restoration/enhancement activities is further discussed in Section 5.7.

It anticipated that a paved access road may be needed across a portion of the vegetative engineered barrier to allow for access to groundwater/NAPL monitoring and recovery wells during the performance of monitoring and maintenance activities. Therefore, the Technical Drawings provided in Attachment A provide for the construction of an access road in the areas indicated in Technical Drawings 4 and 5B of Attachment A. Cross-sections depicting the various cover configurations are provided on Technical Drawings 6 and 7.

5.7 Natural Resource Restoration/Enhancement Activities

As discussed in the Conceptual Work Plan, GE will implement natural resource restoration/enhancement measures within the area covered by the vegetative engineered barrier at the GE Lyman Street parking lot area in accordance with the applicable Performance Standards and requirements set out in Attachment I to the SOW. Further, GE will implement natural resource restoration/enhancement at the unpaved part of the northern portion of the same parcel (I9-8-1). Therefore, as shown on Technical Drawing 1 (Attachment A), these resource restoration and enhancement measures will be performed over both the vegetative engineered barrier at the south portion of Parcel I9-8-1 and the unpaved northern portion of this same parcel. These resource restoration and enhancement measures will consist of the following:

- GE will plant a variety of herbaceous species that will develop into native grassland that can provide a habitat for a variety of small mammals and birds without interfering with the integrity of the engineered barrier. GE anticipates utilizing a seed mix developed to facilitate achieving the herbaceous cover performance standards. As such, GE will consider the application of a warm-season grasses and a wild flower seed mix that include species that are (1) native to Berkshire County, and (2) applicable to the hydrologic regime of the restoration site. Consistent with comments provided by the Natural Resource Trustees at the Newell Street Area II RAA, and GE's Final RD/RA Work Plan Addendum for Newell Street Area II, approved by EPA by letter dated June 9, 2005, and as shown in the technical specifications in Attachment B, the grassland species to be used in the plantings will include the following mixture of native warm-season grass and wildflower species: creeping red fescue (*Festuca rubra*), little bluestem (*Schizachyrium scoparium*), indian grass (*Scorphastrum nutans*), wild blue lupine (*Lupinus perennis*), Canada wild-rye (*Elymus canadensis*), common milkweed (*Asclepias syriaca*), blue verain showy tick-trefoil (*Desmodium canadense*), zig-zag aster/New York aster mix (*Aster prenanthoides/novi-belgi mix*), New England aster (*Aster novae-angliae*), wild senna (*Cassia hebecarpa*), golden alexanders (*Zizia aurea*), butterfly milkweed (*Asclepias tuberosa*). Further, to ensure soil stability and prevent erosion, a nurse crop of annual rye-grass (*Lolium temulentum*) will be added to the seed mixture. The seed mixture will be seeded at a rate of 15 pounds per acre as specified by the supplier (Attachment B) and as approved by EPA at Newell Street Area II. Following completion of the restoration activities, areas of sparse vegetation (if any) will be subject to re-seeding and mulching activities.

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- To provide habitat primarily for fossorial and ground-dwelling wildlife, GE will place uncontaminated stumps and rock piles randomly throughout the GE Lyman Street parking lot area at a minimum spacing of 100 feet. The stumps and piles will be approximately 6 feet in diameter and no more than 3 feet in height. The stumps and rocks will be obtained by GE from an off-site source.
 - GE will also place bluebird boxes along the edges of the GE Lyman Street parking lot area adjacent to the river, with a minimum of 300 yards between boxes.

Additional details related to the scope of natural resource restoration/enhancement activities will be provided to EPA in the supplemental information package. This information is anticipated to include a site plan showing the proposed locations of the stump and rock piles, installation techniques, and seeding procedures. In addition, Section 7.0 of Attachment I to the SOW provides general specifications that will be followed for all plantings to be conducted as part of habitat restoration/enhancement activities at the parking lot area. Finally, Section 8.0 of Attachment I to the SOW requires that GE monitor, inspect, and maintain the plantings and structures in accordance with the Performance Standards and other requirements specified therein.

5.8 Flood Storage Capacity

As discussed in the Conceptual Work Plan, for the soil removal/replacement activities, it is expected that the excavation and backfill/restoration activities will be conducted in such a manner as to re-establish the same general ground surface and topography of the affected areas (to the extent feasible), so that there is minimal net change in flood storage capacity for these actions. However, the construction of the engineered barrier at the GE parking lot area at the southern portion of Parcel I9-8-1 and resource restoration and enhancement at this parcel (Technical Drawing 5B) is anticipated to result in a net loss of flood storage capacity. GE has performed calculations to determine the need for additional flood storage capacity at this RAA. The results of these calculations are presented in Attachment C and summarized below.

Comparison of the final grading configuration within areas subject to installation of an engineered barrier (depicted on Technical Drawing 5B) to the existing surface grades (depicted on Technical Drawings 1 and 3) shows that installation of the proposed engineered barrier and resource restoration/enhancement activities at Parcel I9-8-1 would result in a loss of flood storage capacity totaling approximately 11,200 cubic yards (6.94 acre feet). This estimated loss in flood storage capacity results primarily from the planned installation of the

engineered barrier across the existing GE parking lot area. In addition to the thickness of the barrier itself (i.e., approximately 12 inches), certain other aspects of the barrier installation result in the placement of additional materials and a corresponding loss in the existing flood storage. These items include additional grading material to create a properly-sloped barrier subgrade and surface to facilitate drainage, and the installation of the asphalt access road. To determine the overall net change (loss) in flood storage capacity, the existing topographic conditions were compared to the anticipated, final topographic conditions. This calculation was performed using Terra Model TM digital terrain software, as described in Attachment C. To offset this loss in flood storage capacity, GE will obtain the necessary flood storage compensation through gains in flood storage capacity resulting from other projects within the 100-year floodplain. GE proposes to address the ways in which it will compensate for this loss in flood storage capacity in a separate letter.

5.9 Applicable or Relevant and Appropriate Requirements

The removal actions to be conducted at the Lyman Street Area will be subject to several ARARs. Attachment B to the SOW identifies the chemical-specific, action-specific, and location-specific ARARs for Removal Actions Outside the River. All of these activities will be performed within the 100-year floodplain of the Housatonic River. In these circumstances, the Lyman Street Area Removal Action is subject to the following ARARs identified in Attachment B to the SOW: the action-specific ARARs identified in Table 2, subsection B (“Soil Removal”), subsection C (“Surface Cover Activities”), subsections I and J (regarding consolidation of excavated soils at the OPCAs), and potentially subsection K (“Other”); and the location-specific ARARs identified in Table 3, subsection B (“Floodplains, Wetlands, and Banks”). If any free product, intact drums, and/or other materials that cannot be consolidated at the Building 71 OPCA are encountered during excavation activities, these materials will be removed for on-site storage at the GE Plant Area and subsequently disposed of off-site. Storage of any such materials on-site at the GE Plant Area prior to off-site disposal will be performed in accordance with the ARARs identified in Table 2, subsection H (“Temporary On-Site Storage of Free Product, Drums, and Equipment That Will Be Disposed of Off-Site”) of Attachment B to the SOW will apply to such storage. In addition, the disposition of excavated materials at GE’s Building 71 OPCA will be subject to the ARARs for consolidation at the OPCAs (set forth in Table 1 of the Detailed Work Plan for OPCAs).

A summary of the key ARARs that were considered with respect to the removal actions proposed herein, along with the associated project component(s) and means by which the ARAR is addressed by the design and implementation activities, is as follows:

ARAR	Associated Project Components	Means by Which ARAR Will Be Addressed
Toxic Substances Control Act (TSCA) Regulations (PCB Remediation Waste) (40 CFR 761.61)	<ul style="list-style-type: none"> • Soil removal • Surface cover activities 	<ul style="list-style-type: none"> • EPA has determined that Removal Actions conducted in accordance with the CD and SOW will not pose an unreasonable risk of injury to health or the environment.
TSCA Regulations (Decontamination) (40 CFR 761.79)	<ul style="list-style-type: none"> • Soil removal (equipment cleaning) 	<ul style="list-style-type: none"> • Will be attained by cleaning equipment as necessary in accordance with TSCA regulations (see Section 7.5.9).
Resource Conservation and Recovery Act (RCRA) Hazardous Waste Regulations (40 CFR 261.24)	<ul style="list-style-type: none"> • Soil removal 	<ul style="list-style-type: none"> • Appendix IX+3 evaluations (Section 4 of Conceptual Work Plan).
Clean Water Act NPDES Regulations (Stormwater Discharges) [40 CFR 122.44(k); 40 CFR 122.26(c)(ii)(C); 40 CFR 125.100-.104]	<ul style="list-style-type: none"> • Soil removal • Surface cover activities 	<ul style="list-style-type: none"> • Implementation of erosion and sedimentation controls (Section 7.4.5).
Massachusetts Air Pollution Control Requirements (310 CMR 7.09)	<ul style="list-style-type: none"> • Soil removal • Surface cover activities 	<ul style="list-style-type: none"> • Implementation of dust control measures (as necessary) and air monitoring (Sections 7.5.2 and 7.6, respectively).
TSCA Regulations (Storage for Disposal) (40 CFR 761.61; 40 CFR 761.65)	<ul style="list-style-type: none"> • Temporary storage of removed materials 	<ul style="list-style-type: none"> • Temporary storage of free product and liquids in tanks or containers at GE's existing on-plant tank system or hazardous waste storage facility, both of which meet the long-term PCB storage requirements of TSCA. • Temporary storage of drums and other equipment in containers at GE's existing on-plant hazardous waste storage facility, which meets the long-term PCB storage requirements of TSCA.
TSCA Regulations (PCB Marking Requirements) (40 CFR 761.40)	<ul style="list-style-type: none"> • Temporary storage of removed materials 	<ul style="list-style-type: none"> • Will be attained by marking PCB items in accordance with these requirements.
RCRA Hazardous Waste Regulations (Storage of Hazardous Waste) (40 CFR 264, Subparts I and J 40 CFR 262.34)	<ul style="list-style-type: none"> • Temporary storage of removed materials 	<ul style="list-style-type: none"> • Temporary storage of free product and liquids in tanks or containers at GE's existing on-plant tank system or hazardous waste storage facility. • Temporary storage of drums and other equipment in containers at GE's existing on-plant hazardous waste storage facility. • Storage of materials in tanks will be limited to 90 days or less and will meet the substantive requirements for up to 90-day accumulation in tanks. • Materials in containers will be stored at GE's hazardous waste storage facility, which meets the requirements for long-term storage of hazardous waste in containers.

ARAR	Associated Project Components	Means by Which ARAR Will Be Addressed
RCRA Hazardous Waste Management/Disposal Facilities Regulations (Preparedness and Prevention) (40 CFR 264, Subparts C)	<ul style="list-style-type: none"> Temporary storage of removed materials 	<ul style="list-style-type: none"> GE's existing on-plant hazardous waste storage facility meets these requirements.
RCRA Hazardous Waste Management/Disposal Facilities Regulations (General) (40 CFR 264.13 - .19)	<ul style="list-style-type: none"> Temporary storage of removed materials 	<ul style="list-style-type: none"> Operation of GE's existing on-plant hazardous waste storage facility meets these requirements.
RCRA Hazardous Waste Management/Disposal Facilities Regulations (Closure) (40 CFR 264.111 - .115)	<ul style="list-style-type: none"> Temporary storage of removed materials 	<ul style="list-style-type: none"> Upon termination of operations, GE's existing on-plant hazardous waste storage facility will be closed in accordance with the substantive requirements of these regulations.
Massachusetts Hazardous Waste Regulations (Storage of Hazardous Waste) (310 CMR 30.680, 30.690 310 CMR 30.340)	<ul style="list-style-type: none"> Temporary storage of removed materials 	<ul style="list-style-type: none"> See discussion of Federal RCRA Hazardous Waste Regulations (Storage of Hazardous Waste) above.
Massachusetts Hazardous Waste Regulations (Closure) (310 CMR 30.580)	<ul style="list-style-type: none"> Temporary storage of removed materials 	<ul style="list-style-type: none"> See discussion of Federal RCRA Hazardous Waste Regulations (Closure) above.
ARARs Relating to Disposition of Excavated Materials in OPCAs	<ul style="list-style-type: none"> Permanent consolidation of removed materials at Building 71 OPCA 	<ul style="list-style-type: none"> Refer to August 25, 1999 letter from GE to EPA re: <i>Supplemental Addendum to June 1999 Detailed Work Plan</i>, for relevant ARARs relating to disposition of excavated material at the OPCAs and means of addressing such ARARs.
TSCA Spill Cleanup Policy (40 CFR 761, subpart G)	<ul style="list-style-type: none"> New PCB spills (if any) during on-site activities 	<ul style="list-style-type: none"> GE will consider and address cleanup policy for any new PCB spills that occur during the work.
Executive Order for Floodplain Management [Exec. Order 11988 (1977); 40 CFR Part 6, App. A; 40 CFR 6.302(b)]	<ul style="list-style-type: none"> Soil removal and surface cover activities in floodplain 	<ul style="list-style-type: none"> No practical alternative with less adverse impact on floodplain. Implementation of erosion and sedimentation controls (Section 7.4.5). Provision of compensatory flood storage capacity to offset loss in flood storage capacity (Section 5.8). Restoration of habitat (Section 7.5.10).
Massachusetts Wetlands Protection Act and Regulations [MGL c. 131 §40; 310 CMR 10.53(3)(q); 310 CMR 10.54-.58]	<ul style="list-style-type: none"> Soil removal Placement of fill materials within 100-year floodplain Natural Resource Restoration/Enhancement Activities 	<ul style="list-style-type: none"> No practical alternative with less adverse impact on resource areas. All practical measures will be taken to minimize adverse impact on river. Implementation of erosion and sedimentation controls (Section 7.4.5). Natural Resource Restoration/ Enhancement Activities (Section 5.7). Provision of compensatory flood storage capacity to offset loss in flood storage capacity (Section 5.8). Restoration of disturbed vegetation (Section 7.5.10).

6. Contractor Selection

As discussed above, the Lyman Street Parking Lot is currently being used by EPA to for activities related to the 1½ Mile Reach Removal Action. Following EPA's approval of this Final Work Plan and in coordination with the completion of EPA's use of this area, GE will select a Remediation Contractor that is qualified to complete the on-site soil remediation/construction activities. To accomplish this, GE will develop a Request for Proposal (RFP) that describes the project, provides the Technical Drawings contained herein, provides Technical Specifications for completing the work, and solicits bids from prospective contractors. GE and its Supervising Contractor (Blasland, Bouck & Lee, Inc.) will then review the potential Contractor bids for completeness, relevant experience, the proposed work schedule, and the Contractors' financial status. After the review is complete, GE will select the Remediation Contractor and initiate a contractual agreement.

Upon selection, the Remediation Contractor will be responsible for providing several submittals to GE, including those identified in Section 7.3 of this Final Work Plan. GE will subsequently provide the Contractor information and submittals to EPA in a supplemental information package, as described in Section 9 of this Final Work Plan.

7. Implementation Plan

7.1 General

As indicated in Section 5.2, the POP contains a series of plans that address several common aspects for Removal Actions Outside the River. As relevant, those plans will be followed during implementation of the Lyman Street Area Removal Action.

As a supplement to the implementation-related procedures specified in the POP plans, this section provides additional details regarding certain construction activities. Specifically, this section identifies the requirements for project-specific plans to be submitted by the selected Remediation Contractor, describes site-specific elements of the site preparation and construction activities, and summarizes the project-specific perimeter air monitoring approach.

7.2 Project Participants

To the extent possible, the following table identifies the key project participants involved in the design and implementation of the Lyman Street Area remediation/construction activities, along with their project roles and contact information:

Organization/Contact	Role	Address and Phone Number
United States Environmental Protection Agency William P. Lovely, Jr.	<ul style="list-style-type: none">- Lead regulatory agency.- Review and approval of Final Work Plan.- Oversight of removal actions.	USEPA Region 1 One Congress Street, Suite 1100 Boston, MA 02114-2023 (617) 918-1240
General Electric Company Richard W. Gates	<ul style="list-style-type: none">- Supervise pre-design, construction, and documentation activities related to the Lyman Street Area Removal Action.- Supervise implementation of the Removal Action and related activities to ensure that they are conducted in accordance with the CD.- Direct/coordinate activities of the Remediation Contractor and other GE-contracted organizations.- Responsible for preparation of a Final Completion Report.	General Electric Company 159 Plastics Avenue Building 59 Pittsfield, MA 01201 (413) 448-5909

Organization/Contact	Role	Address and Phone Number
Blasland, Bouck & Lee, Inc. James M. Nuss, P.E., LSP	<ul style="list-style-type: none"> - Supervising Contractor for GE. - Review Remediation Contractor submittals. - Project coordination and documentation. - Provide technical assistance related to the implementation of the Removal Action. - Assist in verifying that the Removal Action is complete and performed in accordance with the Work Plan. - Prepare Final Completion Report. 	Blasland, Bouck & Lee, Inc. 6723 Towpath Road Syracuse, NY 13214 (315) 446-9120
Berkshire Environmental Consultants Maura Hawkins	<ul style="list-style-type: none"> - Design and implement perimeter air monitoring in conjunction with construction activities. 	Berkshire Environmental Consultants, Inc. 152 North Street, Suite 250 Pittsfield, MA 01201 (413) 443-0130
Remediation Contractor (To be determined)	<ul style="list-style-type: none"> - Implement all construction-related activities. 	(To be determined)

7.3 Contractor Submittals

Once selected, the Remediation Contractor will be required to provide certain pre-mobilization submittals to demonstrate that the Contractor: (a) has an adequate understanding of the scope of the Removal Action; (b) has developed a project-specific sequence that can efficiently perform all on-site activities within the allowable schedule; (c) will utilize acceptable materials, products, and procedures; and (d) will perform all activities in a manner that is protective of on-site workers and the surrounding community. Certain of those submittals relate to the manner in which the work activities will be implemented and, as such, will supplement the information and procedures presented in this plan. Those submittals include an Operations Plan, HASP, and Contingency Plan. Each of these submittals is further described below.

Operations Plan

The purpose of the Operations Plan is to summarize the materials, procedures, timelines, and controls that the Contractor intends to utilize during project activities. This plan will be prepared in consultation with GE and its Supervising Contractor and will include the following:

- List of equipment to be used on-site;
- Work Schedule;

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- The Contractor's proposed plan for controlling vehicular and pedestrian traffic during the performance of construction activities;
 - Proposed sheetpiling design (if applicable) or alternate excavation stabilization measures;
 - The Contractor's qualifications package (if requested by GE);
 - Stormwater (including run-on and run-off), erosion, noise, and dust control measures;
 - The Contractor's proposed excavation approach;
 - Materials handling and staging approach; and
 - Equipment cleaning procedures.

HASP

The HASP will identify the Remediation Contractor's project-specific health and safety procedures, and will be developed to address the minimum requirements established in the POP and 29 CFR 1910 and 1926. The plan will address those activities to be undertaken by the Contractor and present required information including, but not limited to, the following (as applicable):

- Training;
- Identification of key personnel (including the Contractor's Health and Safety Officer);
- Medical surveillance;
- Site hazards;
- Work zones;
- Personal safety equipment and protective clothing;
- Personal air monitoring;
- Personnel/equipment cleaning;
- Confined space entry;
- Construction safety procedures;
- Standard operating procedures and safety programs; and
- Material safety data sheets.

Contingency Plan

The Contingency Plan will set forth procedures for responding to emergency conditions or events that may occur during the performance of the Removal Action, and will include the following information:

- A spill prevention control and countermeasures plan for all materials brought on the work site;
- Emergency vehicular access/egress;
- Evacuation procedures of personnel from the work site;
- For work sites that include or are adjacent to a surface water drainage way, a flood control contingency plan identifying measures to protect the work site(s) and the waterway from impacts in the event of high water and/or flood conditions;
- A list of all contact personnel with phone numbers and procedures for notifying each;
- Routes to local hospitals; and
- Identification of responsible personnel who will be in a position at all times to receive incoming phone calls and to dispatch Contractor personnel and equipment in the event of an emergency situation.

In addition to the required pre-mobilization document submittals specified above, the Remediation Contractor will be required to prepare a submittal(s) specifying the sources and, if necessary, the corresponding analytical data for proposed backfill sources to be used during the performance of this project.

Once developed by the selected Remediation Contractor and approved by GE, each of the above-listed Contractor submittals will be submitted to EPA in a supplemental information package. In addition to these submittals, the Contractor is required to provide GE with various other submittals over the course of this project. The overall purpose of such submittals is to verify that the materials and procedures used in the construction activities are consistent with the design of the Removal Action. In accordance with the POP, all Contractor submittals will be tracked to confirm their receipt and approval. A copy of the Technical Submittal Register provided to the prospective Contractors as part of the RFP for this project is provided in Attachment D. (Please note that submittals required by GE but not subject to submittal to EPA as part of the supplemental information package have been shaded.)

7.4 Site Preparation

Immediately prior to or following mobilization to the work area, the selected Remediation Contractor will perform several site preparation activities to establish the necessary site controls, features, and procedures for subsequent implementation of the construction activities. These activities include the following:

- Obtaining utility clearances;
- Establishing site controls and access;
- Site survey and layout;
- Installing erosion and sedimentation control measures; and
- Surface preparation.

General information regarding various site preparation activities (e.g., coordinating with local utilities, permitting, verifying existing conditions, establishing work areas, etc.) is provided in the general CQAP (part of the POP); the information provided below supplements that CQAP by providing additional site-specific details associated with certain of these activities.

7.4.1 Utility Clearances

Above ground and underground utilities that could potentially be affected by the construction activities will be identified prior to initiating any intrusive subsurface activities (e.g., soil excavation, etc.). As indicated on Technical Drawings 1 through 5B, certain subsurface and above ground utilities are known to be present within and adjacent to the Lyman Street Area. Subsurface utilities include electric and gas lines and above ground utilities include overhead power lines at Parcel I9-8-2. In addition to these utilities, there is aboveground and underground piping and/or electrical wiring associated with GE's ongoing NAPL recovery operations at the Lyman Street Area. Additional details regarding the temporary shut-down/start-up of this NAPL recovery system are provided in Section 7.5.7. The selected Contractor will be responsible for coordinating with DIGSAFE to determine the locations of all utilities at the start of the work and coordinating with the owners of the utilities regarding relocation/termination of any utilities, as required.

GE will work with the selected Contractor in coordinating with WMECo (and any other related utility companies) to identify the presence of underground wiring associated with the high tension electrical towers

located on Parcel I9-8-2. Providing this information can be obtained prior to submitting the supplemental information package, it will be included.

7.4.2 Work Area Security

The level of work area security will depend on the activities being performed and the location of those activities. Security measures will be selected in consultation with the Remediation Contractor and may consist of temporary fencing or barriers, maintenance of sign-in/sign-out sheets, and implementation of safe work practices, as described below.

Temporary Fencing - Temporary construction fencing will be installed, as needed, to delineate and secure areas during ongoing construction activities. While other fencing configurations of equivalent performance may be considered, such temporary fencing is expected to be at least 4 feet in height, constructed of high-density polyethylene, and orange in color.

Sign-In/Sign-Out Sheet - For the duration of construction activities, a sign-in/sign-out sheet will be maintained for the work site. All on-site personnel and visitors will be required to sign in upon entering the work area and sign out upon leaving.

In addition, safe work practices will also be employed at this work site. These activities may include any of the following:

Daily Safety Meetings - Such meetings, commonly referred to as tailgate meetings, are typically held with the Contractor to discuss hazards potentially encountered during the planned daily activities.

Posting of Warning Tape - To restrict access during construction activities, warning tape may be installed at certain locations to delineate certain areas, such as the exclusion zone, contaminant reduction zone, and/or support zone.

Use of Flagmen or Other Signaling Devices - Certain excavation activities in high traffic areas may necessitate the use of flagmen or other signaling devices (i.e., flashing beacons mounted on sawhorses).

7.4.3 “Clean” Access Area

Since a number of activities will require periodic access/egress between the work site and adjacent areas, a “clean” transition area will be established. Such an area will be used for equipment/material delivery and for the positioning of trucks for subsequent loading and off-site transport of excavated materials. It is expected that each transport area will be constructed of gravel or a layer of geotextile fabric and will be properly delineated from the remainder of the property. The specific location and construction of the access area will be developed by the Remediation Contractor in accordance with the anticipated progression of the construction actions, as well as other factors such as the layout of the site, traffic patterns, and material handling procedures.

7.4.4 Survey Control

In accordance with the CQAP, survey controls will be established at the start of the work and maintained throughout the construction activities. GE will provide survey benchmarks so that the Remediation Contractor can establish appropriate horizontal and vertical control consistent with the existing survey data. As stated in the CQAP, the Remediation Contractor will establish a minimum 50-foot control grid within the Lyman Street Area. This survey will be performed to verify that the horizontal and vertical limits of removals have been obtained and the final surface grade has been achieved to the existing elevations prior to EPA constructing any access roads, support areas, and performing any restoration.

Prior to placing any engineered barrier materials, the Contractor will be required to survey the current elevation at each grid point, plus up to 10 additional locations to be identified at the discretion of GE. The 10 additional locations to be identified by GE will be for the purposes of verifying breaks in topography or other features that might not otherwise be adequately documented via the 50-foot grid. Once the engineered barrier materials are placed, the Contractor will be required to survey final elevations at the 50-foot grid points, plus the additional locations identified by GE. This survey will be performed to verify that a minimum 1-foot-thick engineered barrier has been placed in all areas within the Lyman Street Area (relative to the initial survey), and to verify that the final surface grade has been achieved. Placement of the final surface cover materials (i.e., topsoil or asphalt, as appropriate) will not be permitted until GE has reviewed the Contractor’s survey documentation to verify that the specified surface cover thickness has been provided.

7.4.5 Erosion and Sedimentation Control Measures

Erosion and sedimentation control measures will be implemented to minimize the potential for erosion of exposed soils and subsequent accumulation of materials in site drainage pathways. In addition, these measures will be used to divert rainfall runoff from contacting any soil stockpile areas and/or entering work areas and open excavations.

Specific to this RAA, erosion control measures to be implemented will include placement of hay bales and/or staked silt fencing around the perimeter of the downhill side of the work areas, plus additional area-specific measures, as required. The approximate location and layout of the hay bales/siltation fencing are indicated on Technical Drawing 2. This fencing will be placed at the start of the site work activities and will be maintained until a good stand of vegetation is established.

In addition to the hay bale/silt fence, other erosion and sedimentation control measures will be implemented as needed. At a minimum, this will include placement of erosion control measures around any temporary soil stockpiles.

7.4.6 Surface Preparation

Various surface preparation activities will be performed prior to or in conjunction with the initial site preparation activities. These surface preparation activities are specified on Technical Drawings 2 and 3.

7.5 Construction Activities

7.5.1 Monitoring Well Decommissioning

Sixty-one groundwater monitoring wells and three nonaqueous phase liquid (NAPL) recovery wells are located within the Lyman Street Area. Specifically, the wells are located on the following properties:

Groundwater Monitoring:

- Parcel I9-4-14 – well GMA1-5;
- Parcel I9-4-25 – well MW-2;

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- Parcel I9-4-201 – wells EPA-1, LS-43, LS-44, LS-45, LSSC-07, LSSC-08, LSSC-08S, LSSC-16I, LSSC-16S, LSSC-17, LSSC-32, LSSC-33, MW-3R, and MW-4R;
 - Parcel I9-4-202 – well MW-6R;
 - Parcel I9-4-203 – well B-2;
 - Parcel I9-8-1 – wells LS-02, LS-04, LS-10, LS-11, LS-12, LS-13, LS-20, LS-21, LS-22, LS-23, LS-24, LS-25, LS-28, LS-29, LS-30, LS-31, LS-32, LS-33, LS-34, LS-35, LS-36, LS-37, LS-38, LS-41, LSSC-02, LSSC-03, LSSC-04, LSSC-05, LSSC-06, LSSC-09, LSSC-10, LSSC-18, LSSC-19, LSSC-34I, LSSC-34S;
 - Parcel I9-8-2 – wells E-01, E-03, E-04, and E-07.

NAPL/Groundwater Recovery Wells:

- Parcel I9-8-1 – wells RW-1 (inactive), RW-1(R), RW-2, and RW-3.

The majority of the monitoring and NAPL/groundwater recovery wells were installed as part of the GMA 1 groundwater quality monitoring/NAPL source recovery well network (although not all of the monitoring wells are currently being sampled under the interim groundwater monitoring program currently in progress at GMA 1). Most of these monitoring wells will be proposed to be protected during the performance of the remediation activities described herein. However, several monitoring wells (most of which are not currently used in the GMA 1 program) located in areas not considered vital to the monitoring program will be proposed for decommissioning prior to the commencement of soil removal activities. The wells which are subsequently approved by EPA for decommissioning will not be replaced following decommissioning and performance of the proposed remediation activities.

GE has proposed in the GMA 1 NAPL monitoring report for Spring 2005 to decommission certain monitoring and recovery wells in the Lyman Street Area that are no longer considered critical to the performance of the GMA 1 groundwater quality monitoring program. That proposal also outlined proposed changes to the existing DNAPL recovery systems prior to and/or in conjunction with performance of the proposed remediation activities. Following EPA approval of that proposal, GE will decommission each of these monitoring wells in accordance with the general procedures described in Appendix GG of the FSP/QAPP.

These wells will be decommissioned prior to the removal activities, construction of the engineered barrier, and resource restoration/enhancement. Implementation of any proposals approved by EPA will be conducted under GE's GMA 1 NAPL monitoring program, although the field activities will be performed in coordination with the proposed remediation activities for the Lyman Street Area. All current monitoring and recovery well locations are shown on Technical Drawing 1 and 3. Those wells that are anticipated to remain in use following the removal action and installation of the engineered barrier and resource restoration and enhancement activities are shown on Technical Drawing 4. The wells shown on this drawing may be subsequently modified based on EPA's review of the wells to be subsequently proposed for decommissioning.

7.5.2 Soil Removal, Material Handling, and Transportation and Disposal

The proposed removal actions will require excavation and handling of certain existing soils within Lyman Street Area. Specifically, existing soils within the excavation limits and depths, as depicted on Technical Drawing 3, will be removed using conventional construction equipment (e.g., excavator, backhoe, loader). The maximum depth of excavation will be approximately 6 feet below ground surface (bgs). Based on data from the ongoing groundwater monitoring program at the Lyman Street Area (indicating that the minimum depth to groundwater is approximately 4.1 feet near the areas where removal is anticipated to occur). Therefore, saturated materials may be encountered in the deeper excavations. If saturated materials are encountered, they will be mixed with drier soil such that the resulting material will pass the Paint Filter Test.

As soils are excavated, and prior to their transport to the Building 71 OPCA, a number of intermediate on-site handling activities may be necessary. To ensure that such activities are performed in a manner that minimizes the potential for inadvertent releases to the environment, unsafe conditions for on-site and off-site personnel, and delays or complications in project completion, several on-site material handling procedures will be implemented. The specific method(s) of handling the removed soils will be based on, but not limited to, the following considerations:

- The characteristics of the excavated soils and corresponding disposition requirements;
- The locations from which the materials are removed and their proximity to the loading area(s); and
- The overall sequence and schedule of the removal actions.

To reduce the potential for the release of PCBs or other Appendix IX+3 constituents to the environment during removal and handling activities, the number of times that the excavated material is handled will be kept to a minimum. To accomplish this, the Remediation Contractor will conduct direct loading to trucks to the extent practical. Additional information regarding material handling is discussed below.

- To reduce the potential for migration of PCBs or other Appendix IX+3 constituents due to wind- and rainfall-related factors, temporary stockpiles (such as GE may construct at the GE plant site), staging areas, and work areas where excavation activities are yet to be completed will be protected with a cover (e.g., polyethylene sheeting), which will be anchored when the area is not under active excavation/use. In addition, if concerns regarding airborne dust are identified or suspected, water will be sprayed to keep the open excavation (or excavated soils) moist. Finally, to the extent possible, all temporary stockpiles and staging areas will be located in areas subject to future excavation activities to prevent possible contamination of clean soils. If such stockpiles or staging areas are required in areas not subject to future excavation, polyethylene sheeting will be placed under such stockpiles or staging areas and these areas will be bermed to prevent excavated soils or precipitation runoff from such stockpiles from contacting underlying soils.
- To the extent feasible and practicable, material handling and loading areas will not be established in locations that may interfere with construction operations or necessary traffic flow. In addition, material handling areas will be located so as to take into account site topography and avoid (to the extent possible) low-lying drainage areas where surface runoff is likely to accumulate.
- Additional erosion and sedimentation control measures (e.g., hay bales and geotextile fencing) will be utilized as necessary.

Based on the specified soil removal limits identified on Technical Drawing 3, the total volume of existing materials to be removed from the work area is approximately 4,078 in-situ cubic yards. Based on a review of the analytical results collected from within these removal limits during previous investigations, GE has determined that soils removed as part of the activities described herein will be subject to placement in GE's Building 71 OPCA. Additional information regarding the transport and disposition of excavated materials is provided below in Section 7.5.4.

7.5.3 Groundwater Management

As noted above, the minimum depth to groundwater at the locations where removals are anticipated to occur is approximately 4.1 feet. There is one 5-foot and one six-foot removal at Sub-Area 201A. If groundwater enters at these deeper removal areas, it is anticipated that sumps equipped with pumps should be able to keep the excavation dry. If such an arrangement is necessary to keep the excavation dry, a tanker truck, and possibly temporary water storage tanks, will be brought on site to collect the pumped groundwater prior to transporting it to GE's Building 64G water treatment plant for treatment and discharge.

7.5.4 Transport and Disposition of Excavated Materials and Remediation-Derived Waste

As indicated above, all excavated materials will be consolidated in GE's Building 71 OPCA, excluding items (if any) that are prohibited for disposition at the OPCAs under the CD and SOW. Previous sampling and analysis conducted for soils at the Lyman Street Area indicate that soils at most sampling locations that represent the areas where soil will be excavated during the Removal Action either have PCB concentrations over 50 ppm, and thus are regulated for disposal under TSCA, or appear to have concentrations of other constituents that would cause them to constitute characteristic hazardous waste under RCRA. As such, all excavated soils will be transported to and consolidated at the Building 71 OPCA, which is authorized to receive TSCA- and RCRA-regulated material.

The transportation of excavated materials from the Lyman Street Area for disposition at the Building 71 OPCA will occur "on-site" within the meaning of Paragraph 9 of the CD, and thus will be subject to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) on-site permitting exemption referenced in Paragraph 9.a of the CD. In these circumstances, site-specific transportation procedures have been developed for this Removal Action, as listed below. Finally, as discussed above in Section 5.9, if any free product, intact drums, and/or other materials that cannot be consolidated at the Building 71 OPCA are encountered during excavation activities, these materials will be removed for on-site storage at the GE Plant Area and subsequently disposed of off-site.

The Remediation Contractor will be required to implement the following procedures for the transport of excavated materials from the Lyman Street Area to the Building 71 OPCA:

-
- Employ qualified personnel trained per U.S. Department of Transportation (DOT) requirements for handling and shipping hazardous materials, with such training to include general safety, emergency response, exposure protection, accident prevention, preparation of shipping papers, and securing loads;
 - Employ drivers that have a Commercial Driver's License (CDL) with a Hazardous Materials Endorsement;
 - Utilize trucks that are DOT-inspected;
 - Include in its HASP, Operations Plan, and Contingency Plan detailed provisions for responding to transportation emergencies such as spills, releases, or other incidents;
 - Maintain records of the number of loads of materials sent to the Building 71 OPCA on a daily basis; and
 - Utilize the EPA Paint Filter Test as necessary to confirm that the materials are suitable for transport (i.e., no free liquids).

The transport of excavated materials from the Lyman Street Area to the Building 71 OPCA will be conducted in accordance with the following guidelines:

- After a safety check of the truck, the truck bed will be lined with polyethylene. Excavated soil will be placed in the truck and the load will be covered.
- A Hazardous Materials Bill of Lading (BOL) will be prepared and signed by the truck driver. The DOT shipping description to be used on the BOL will be:

"RQ, Polychlorinated biphenyls, mixture, 9, UN 2315, PG 111, RQ"

- After another safety check of the vehicle and placarding, the truck will leave the site and proceed to the Building 71 OPCA utilizing the primary route shown on Figure 7-1. If, for some reason, the primary route is not used, the secondary route shown on Figure 7-1 (or an alternate route to be proposed by GE to EPA) will be used.

-
- Upon arrival of the truck at the Building 71 OPCA, the OPCA Contractor will document receipt of the load and the material will be off-loaded and placed by the OPCA Contractor.

7.5.5 Backfilling of Excavations

Backfilling operations will be initiated as soon as practicable after completion and proper documentation of excavation activities (i.e., survey control). It is anticipated that the excavations will be backfilled and compacted using conventional construction equipment. Clean backfill materials will be placed in 12-inch thick lifts in a loose state and compacted in accordance with the Technical Specifications (Attachment B) prior to additional fill being placed within the excavation. The excavation will be brought up to the predetermined subgrade elevation prior to installing the final surface layer (e.g., topsoil and seed).

Backfill material will be clean, natural material, no greater than gravel in size to ensure proper settlement, permeability, and compactability. The specific fill sources to be used for this project will be identified by the Remediation Contractor. A description of the process for identifying such sources and, if necessary, submitting the analytical data for them was presented in Section 5.5.

7.5.6 NAPL Collection and Monitoring System

As shown on a Technical Drawings 1, 3, and 4 a NAPL/groundwater recovery system and associated monitoring wells are located at the southern part of the GE Lyman Street parking lot area at Parcel I9-8-1. These NAPL/groundwater wells are operated as part of the GMA 1 groundwater quality monitoring/NAPL recovery well network. The NAPL/groundwater recovery system at the Lyman Street Parking Lot is comprised of three recovery wells (RW-1[R], RW-2, and RW-3) and an above ground pipe rack. These components will need to be protected and in some cases modified prior to the construction of the engineered barrier at this area. Because the construction of the engineered barrier will result in an increase in ground surface elevation in this area, these components will be modified and extended to provide necessary access to the well casings and ground clearance for the pipe rack.

Further, as discussed in Section 7.5.1 above, GE has submitted a separate proposal to EPA to decommission certain monitoring and recovery wells in the Lyman Street Area that are no longer considered critical to the performance of the GMA 1 groundwater quality monitoring program. These wells will be abandoned prior to

the removal activities, construction of the engineered barrier, and resource restoration/enhancement according to the decommissioning procedures referenced in Section 7.5.1. Implementation of any proposals approved by EPA will be conducted under GE's GMA 1 NAPL monitoring program, although the field activities will be performed in coordination with the proposed remediation activities for the Lyman Street Area.

It is anticipated that during the abandonment or modification certain NAPL/groundwater recovery wells that automated pumping system will be temporarily taken off line. Once these activities have been completed and electrical wiring and associated piping are reconnected, and the NAPL/groundwater collection system will be restarted. GE will perform supplemental NAPL monitoring on a weekly basis at each recovery well and, if necessary, manual collection activities will be performed while the automated system is offline.

Following the construction of the engineered barrier, GE proposes that a paved access road be constructed in proximity to the recovery wells and associated above ground piping to provide efficient access to these components and prevent damage to the engineered barrier. Additional information regarding this access road is provided below.

7.5.7 Placement of Engineered Barrier

The area where the engineered barrier will be installed at the Lyman Street Area RAA is shown on Technical Drawing 4, while the subsurface and final surface grading configurations are provided on Technical Drawings 5A and 5B, respectively. Construction details and notes for the engineered barrier (e.g., cross-sections, anchor trenches, etc.) provided on Technical Drawings 7 through 9.

It is anticipated that conventional construction equipment will be used to spread and compact the various cover materials that are incorporated within the particular type of cover. It is anticipated that the geotextile cushion, geomembrane liner, and geocomposite will be laid out by hand and anchored with sand bags until the remaining cover materials are placed. During the placement of any type of engineered barrier, the Contractor will exercise appropriate care when covering the geotextile, geomembrane, and geocomposite layers with the cover materials such that construction equipment does not damage the liner components. The specific materials to be used and procedures to be followed when installing the sublayers of the engineered barriers are provided in detail in the Technical Specifications (Attachment B).

As discussed in Section 5.6, the surface cover for the engineered barrier at the Lyman Street parking area will consist of topsoil and grass seed. Information regarding the vegetative planting associated with natural resource restoration/enhancement activities within this area is specified in Section 5.7. The specific materials to be used and procedures to be followed in installing the surface covers for the engineered barriers are also provided in detail in the Technical Specifications in Attachment B.

As discussed above, GE proposes that a paved access road be constructed to provide access to the NAPL/groundwater recovery wells located where the engineered barrier is to be constructed. The paved surface of the access road is expected to provide the protection needed for the engineered barrier under loads from large trucks that may be needed for the maintenance of the extraction wells. The proposed location for this access road is depicted on Technical Drawings 4, 5A, and 5B (Attachment A). GE will subsequently propose to compensate for the loss of resource restoration/enhancement at the area associated with the construction of this access road by implementing these measures at an offset area with the same overall square footage. GE will propose to perform these measures at another appropriate RAA to be approved by EPA.

7.5.8 Installation of Excavation Controls

For excavations extending to depths greater than 4 feet and which Contractor personnel will enter to perform work, excavation sidewall stabilization will be required, as discussed in Section 5.4. In addition, excavations adjacent to the building foundation at Sub-Area 201A may require additional support of the foundation. If additional procedures/controls beyond those included herein are identified prior to submission of the forthcoming supplemental information package, such procedures/controls will be included in that package.

7.5.9 Equipment Cleaning

Equipment and materials that have come into contact with existing soils at Lyman Street Area during the construction activities will be cleaned prior to relocation to an area outside the work zone (i.e., the excavation and loading areas), prior to handling backfill materials, and prior to its departure from the Lyman Street Area. Equipment cleaning will be conducted as specified in Section 3.5 of the Site Management Plan within the POP.

7.5.10 Restoration of Disturbed Vegetation

This section pertains to the restoration of vegetated areas outside the limits of the engineered barrier. As indicated on Technical Drawings 4 and 5B, excavation areas that originally contained vegetated surfaces will first be restored to within 3 inches of the original grade utilizing compacted soil fill materials. In areas requiring the placement of grass seed, 3 inches of topsoil will then be used to restore pre-excavation grades, followed by placement of grass seed and mulch according to the Technical Specifications provided in Attachment B. All restored trees and shrubs will be installed at least 10 feet outside the limits of any engineered barriers on each applicable property to ensure that the barrier components are not impacted at some future time by the root structures of such restored vegetation.

In conjunction with the restoration activities described above, GE anticipates performing a tree inventory within and adjacent to soil removal areas not subject to the placement of an engineered barrier. Primarily, the soil removal areas where trees are present are located within Parcel I9-8-2. Once completed, the results of this inventory will be used to create a tree restoration plan. The tree restoration plan will show the anticipated tree planting locations and list the sizes of trees to be used during restoration. The tree inventory and tree restoration plan will be provided in the supplemental information package.

7.6 Perimeter Air Monitoring

Ambient air monitoring for PCBs and particulate matter will be performed during the removal actions. The scope of the ambient air monitoring program is presented in Attachment E to this Final Work Plan. In overview, ambient air monitoring for PCBs will include collection of ambient air samples using “high volume” samplers equipped with glass fiber filters and polyurethane foam (PUF) cartridges. The samples will be collected, analyzed, and evaluated using the procedures specified in EPA Compendium Method TO-4A. To obtain representative data on ambient levels of PCBs around the construction site before and during construction activities, two PCB air sampling events will be performed prior to the start of construction activities, and additional events will be performed at least once every 4 weeks during the course of construction. Ambient air monitoring for particulates will be performed on a continuous basis during all active construction activities using real-time particulate air monitors.

For both PCB and particulate monitoring, baseline monitor locations will be established at four locations within the Lyman Street Area. Although subject to change based on the location of construction activities and weather conditions, the ambient air monitoring scope of work (Attachment F) identifies preliminary locations for air monitoring. In addition, a background monitoring location will be established during removal actions.

8. Post-Construction Activities

8.1 General

This section addresses the activities to be performed by GE following the completion of removal actions at the Lyman Street Area. These activities include project closeout activities (including preparation and submittal of a Final Completion Report), Post-Removal Site Control activities, and additional activities relating to properties at which a Conditional Solution is implemented. Each of these topics is further discussed below.

8.2 Project Closeout – Pre-Certification Inspection and Completion Report

Once GE has determined that the removal actions for the Lyman Street Area are complete (excluding Post-Removal Site Control activities) and the applicable Performance Standards have been attained, GE will schedule and conduct a pre-certification inspection with EPA and MDEP. This inspection will be conducted within 90 days after GE concludes that the Removal Actions are complete.

After the pre-certification inspection, GE will proceed with remaining closeout activities, which will consist of development and submittal of a Final Completion Report to summarize and document the scope of the completed Removal Action activities. At a minimum, the Final Completion Report will include the following:

- A description of the Removal Actions performed;
- Identification of any deviations from the design submittals approved by EPA;
- A listing of Removal Action quantities, including soil volumes removed and areas subject to installation of engineered barriers;
- Results of quality assurance/quality control (QA/QC) testing performed during the Removal Actions;
- Survey data to document the current grade and final surface contours;
- Copies of Record Drawings to document the as-built conditions;
- Representative project photographs;
- Documentation regarding the disposition of materials excavated in conjunction with the construction activities; and
- A summary of Post-Removal Site Control activities and a schedule for such activities.

As indicated in Section 9, the Final Completion Report will be submitted to EPA within 30 days after the pre-certification inspection (or at such other time as may be proposed by GE and approved by EPA at the time of that inspection).

8.3 Post-Removal Site Control Activities

As required in Technical Attachments I and J of the SOW, a Post-Removal Site Control Plan/Restoration Project Monitoring and Maintenance Plan has been prepared that describes the future inspection, maintenance, and repair activities (I/M activities) to be conducted at the Lyman Street Area and is included as Attachment F. As further discussed in Attachment F, the Performance Standards and other requirements set forth in Section 8 of Technical Attachment I to the SOW pertain to the monitoring and maintenance activities associated with natural resource restoration/enhancement activities to be conducted by GE within the Lyman Street Parking Lot on the southern portion of Parcel I9-8-1 and certain areas at the northern portion of that parcel. Technical Attachment J of the SOW describes the future inspection, maintenance, and repair activities (I/M activities) to be conducted by GE at all areas where soil removal and replacement activities will be performed (Parcels I9-4-14, I9-4-19, I9-4-25/I9-4-202, I9-4-203, I9-4-201, I9-8-1, I9-8-2, Sub-Area 201A, and Recreational Area R1) and the area subject to the installation of the vegetative engineered barrier.

8.4 Additional Activities Relating to Properties with Conditional Solutions

In addition to the Post-Removal Site Control activities mentioned above and further described in Attachment E, GE will undertake activities to comply with the requirements of Paragraphs 34 through 38 of the CD with respect to each property at which a Conditional Solution is implemented. These activities will include the following:

- (1) After completion of all on-site removal activities at this RAA, GE will provide a notification to the owner of each property at which a Conditional Solution has been implemented, describing the terms of the Conditional Solution under the CD (including the requirements applicable to GE and the owner regarding future remediation activities at the property) and describing the residual contamination at the property. In addition, GE will provide such a notification to the holders of any easements or other encumbrances on the property.

-
- (2) In accordance with Paragraph 36 of the CD, on an annual basis, GE will review the most recent property records to determine whether there has been a change in ownership of the property; and, if there has been a change in ownership, GE will provide notice to the new owner regarding the same items described in # 1 above.
- (3) In accordance with Paragraph 38 and Section III of Appendix Q to the CD, GE will perform an annual inspection of the property to determine whether there is evidence, based on visual observation, that any of the following have occurred since implementation of the Removal Action or since the last inspection: (a) any change in activities and uses of the property that would be potentially inconsistent with the land use for which the Conditional Solution was implemented; (b) installation of a new utility or replacement of an existing utility that involved disturbance of soil; (c) any excavations or other activities that might involve exposure to soil deeper than 3 feet from the original grade; and (d) any reduction in surface grade due to activities listed in (b) and (c) above. Following such inspection, GE will prepare and submit a report on the inspection to EPA and MDEP. More details regarding the annual inspections and reports, including an annual inspection checklist to be used for the inspections and reporting, will be provided in the Final Completion Report on this Removal Action.

9. Schedule

As described in Section 6, GE will develop and submit an RFP to potential Remediation Contractors following EPA's approval of this Final Work Plan and completion of its use of the Lyman Street Area Parking Lot for the Upper 1½ - Mile Reach Removal, at a time to be agreed-upon between EPA and GE. GE proposes that within approximately 30 days of selection of a Remediation Contractor, GE will submit a supplemental information package to EPA as a follow-up to this Work Plan. This supplemental information package is anticipated to include the following:

- Identification of and contact information for the selected Remediation Contractor;
- Copies of the Remediation Contractor's pre-mobilization submittals (i.e., Operations Plan, HASP, and Contingency Plan);
- Identification of backfill sources and locations;
- Analytical data for samples collected from the backfill sources (unless the backfill sources have already been approved based on previously submitted analytical data);
- A tree inventory and tree planting plan for soil removal areas not subject to the placement of an engineered barrier; and
- Additional information regarding natural resource restoration/enhancement activities to be conducted by GE in the Lyman Street parking lot area and the unpaved northern portion of Parcel I9-8-1.

Following EPA approval of this Final Work Plan and the supplemental information package, site preparation activities will be initiated. The specific schedule for the implementation and completion of the removal actions at this RAA will depend on several factors, including EPA approval of these documents and its completion of its use of the Lyman Street Parking Area, receipt of the necessary access permission from non-GE property owners to conduct the proposed removal actions at their properties, and timing of the onset of winter weather conditions. As such, GE will discuss with EPA the possible timing of remediation activities for the Lyman Street Area.

Additional details regarding overall project duration, including an estimate of the duration of the entire project in working weeks will be provided in the Remediation Contractor's Work Schedule – which is a required component of the Contingency Plan submittal (Section 7.3) – that will be provided to EPA as part of the forthcoming supplemental information package. With respect to access, if GE is unable to obtain access

permission from particular property owners after using “best efforts” (as defined in the CD) to do so, it will so advise EPA and MDEP and seek their assistance in obtaining such access pursuant to Paragraph 60.f(i) of the CD. In addition, if issues relating to access may cause a delay in the completion of this Removal Action, GE will so advise EPA.

Within 90 days of completing the field construction activities, GE will schedule and conduct a pre-certification inspection with EPA and MDEP, as described in Section 8.2. Within 30 days thereafter, or at such other time as proposed by GE and approved by EPA at the time of the inspection, GE will submit a Final Completion Report on this Removal Action. That report will represent the completion of the CD-required construction activities. Periodic inspection reports will be provided thereafter to EPA in accordance with the schedules outlined in Attachment F.

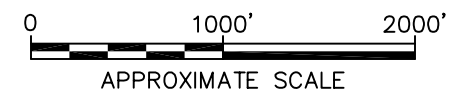
Figures



LEGEND:

■ LYMAN STREET REMOVAL ACTION AREA

- NOTES:
1. MAPPING IS BASED ON AERIAL PHOTOGRAPHS AND PHOTOGRAMMETRIC MAPPING BY LOCKWOOD MAPPING, INC. - FLOWN IN APRIL 1990; DATA PROVIDED BY GENERAL ELECTRIC COMPANY; AND BLASLAND AND BOUCK ENGINEERS, P.C. CONSTRUCTION PLANS.
 2. SITE BOUNDARIES/LIMITS ARE APPROXIMATE.
 3. NOT ALL PHYSICAL FEATURES SHOWN.

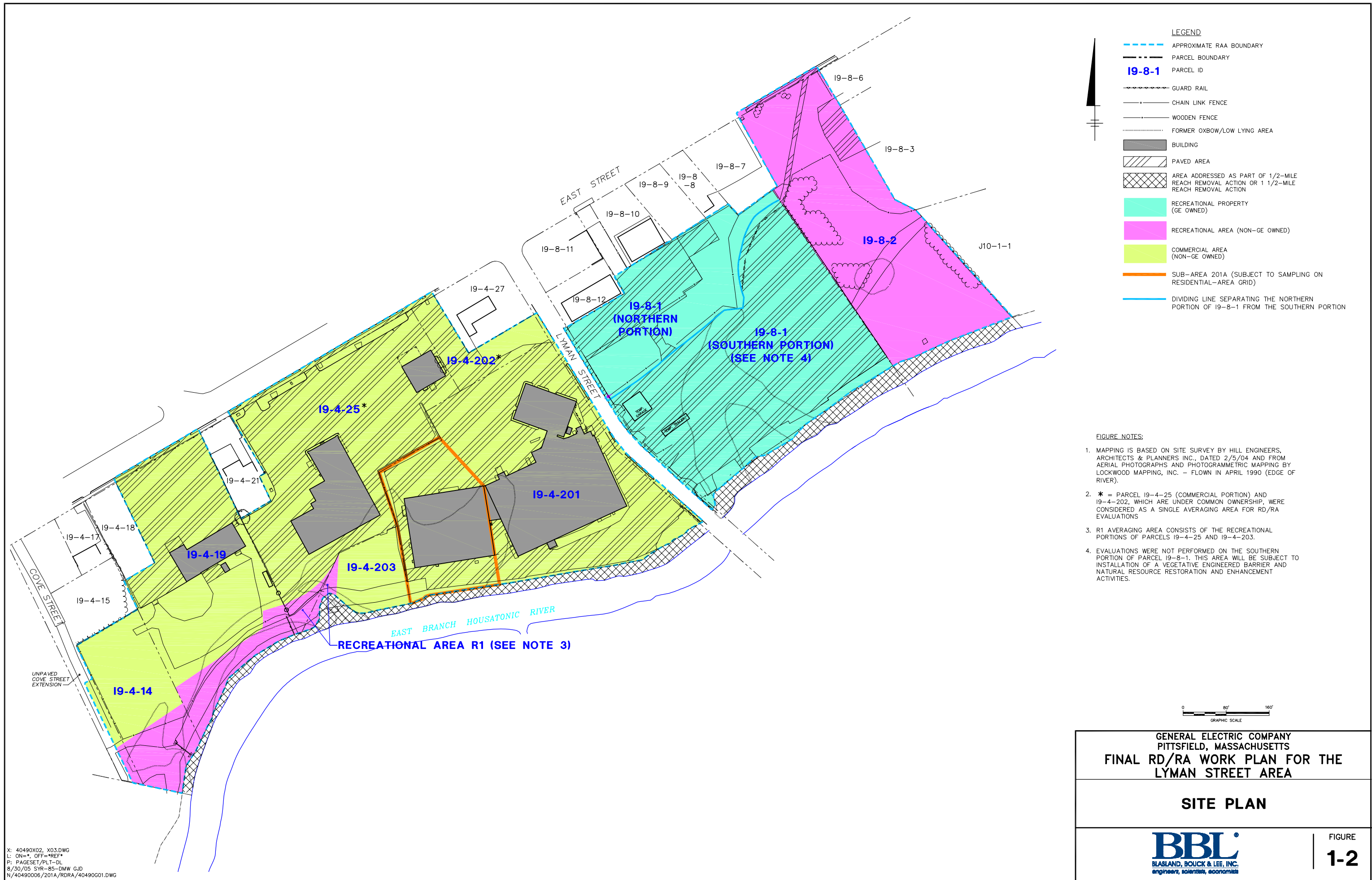


GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
FINAL RD/RA WORK PLAN FOR THE
LYMAN STREET AREA

REMOVAL ACTION AREA



FIGURE
1-1





LEGEND:

- PRIMARY TRAVEL ROUTE TO BUILDING 71 OPCA
- SECONDARY TRAVEL ROUTE TO BUILDING 71 OPCA

NOTES:

- MAPPING IS BASED ON AERIAL PHOTOGRAPHS AND PHOTOGRAMMETRIC MAPPING BY LOCKWOOD MAPPING, INC. - FLOWN IN APRIL 1990; DATA PROVIDED BY GENERAL ELECTRIC COMPANY; AND BLASLAND AND BOUCK ENGINEERS, P.C. CONSTRUCTION PLANS.
- NOT ALL PHYSICAL FEATURES SHOWN.
- SITE BOUNDARIES/LIMITS ARE APPROXIMATE.

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
FINAL RD/RA WORK PLAN FOR THE
LYMAN STREET AREA

**PROPOSED PRIMARY AND SECONDARY
TRAVEL ROUTES FOR EXCAVATED
MATERIALS TO THE BUILDING 71 OPCA**

BBL
BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

FIGURE
7-1

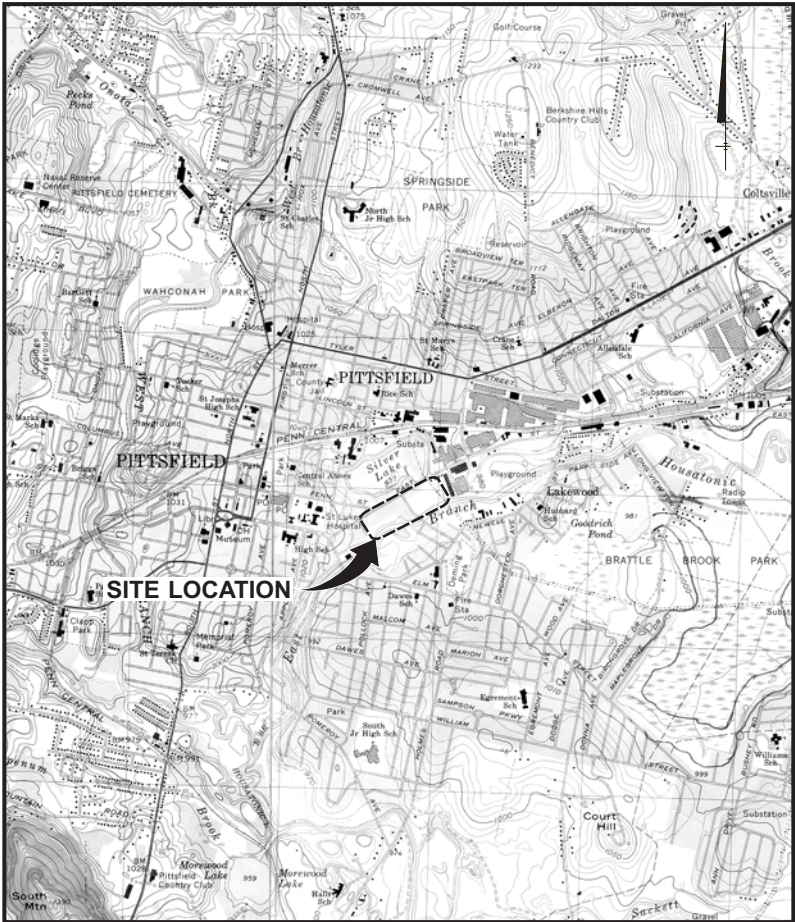
Attachments

Attachment A

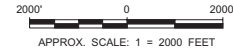
Technical Drawings

TECHNICAL DRAWINGS

REMOVAL ACTION LYMAN STREET AREA REMOVAL ACTION AREA (RAA)



REFERENCE: Base Map Source: USGS 7.5 Min. Topo. Quads., Pittsfield West, Mass-New York and Pittsfield East, Mass., 1973.



LOCATION MAP

SEPTEMBER 2005

PREPARED FOR:



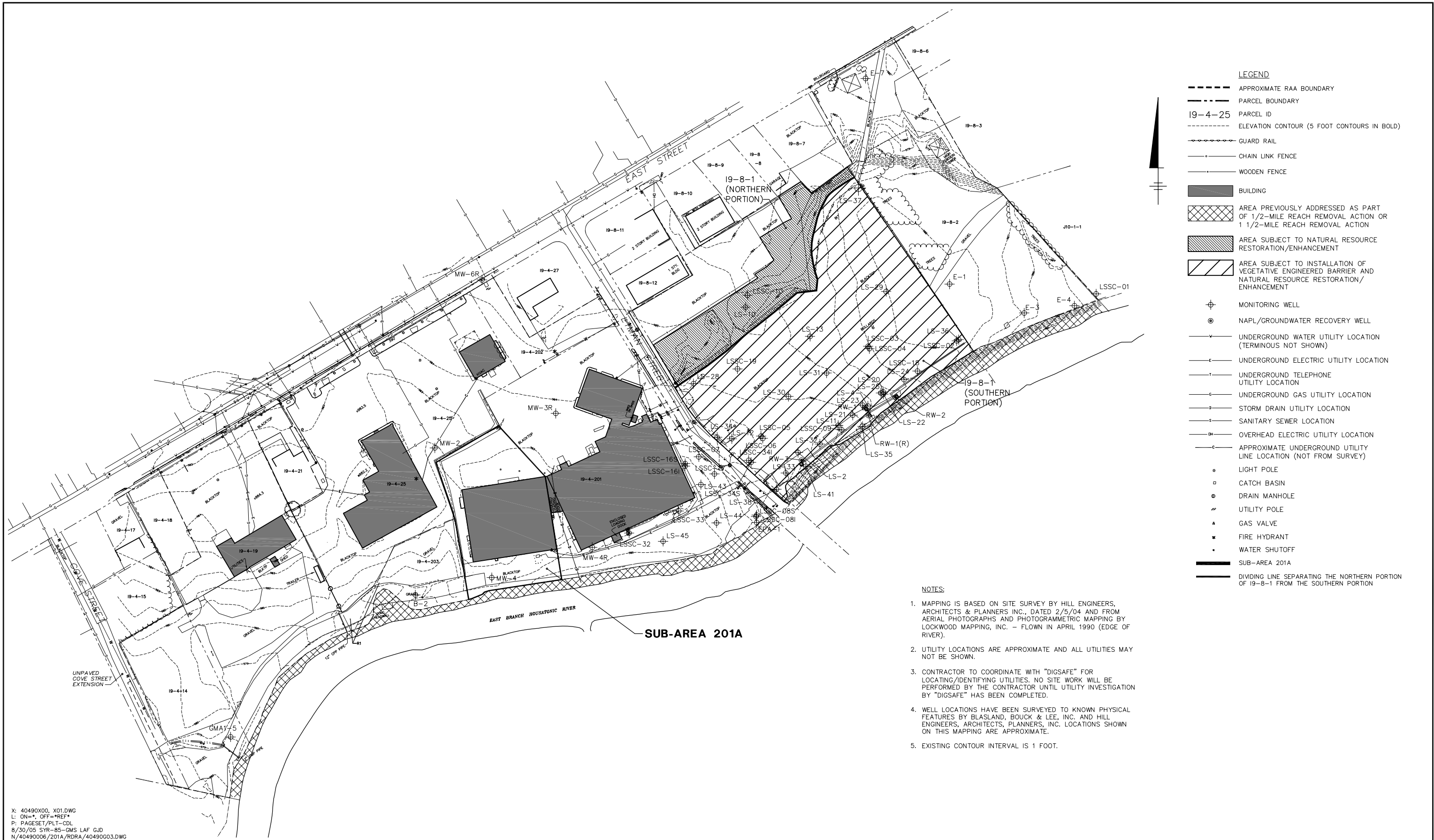
*General Electric Company
Pittsfield, Massachusetts*

PREPARED BY:



INDEX TO DRAWINGS

- COVER SHEET
- 1. EXISTING SITE PLAN
 - 2. SITE PREPARATION PLAN
 - 3. EXCAVATION LIMITS
 - 4. SITE RESTORATION PLAN
 - 5A. ENGINEERED BARRIER PLAN - SUBGRADE
 - 5B. ENGINEERED BARRIER PLAN - FINAL GRADE
 - 6. DETAILS
 - 7. DETAILS
 - 8. GENERAL NOTES AND DETAILS



- LEGEND**
- APPROXIMATE RAA BOUNDARY
 - PARCEL BOUNDARY
 - 19-4-25 PARCEL ID
 - ELEVATION CONTOUR (5 FOOT CONTOURS IN BOLD)
 - GUARD RAIL
 - CHAIN LINK FENCE
 - WOODEN FENCE
 - BUILDING
 - AREA PREVIOUSLY ADDRESSED AS PART OF 1/2-MILE REACH REMOVAL ACTION OR 1 1/2-MILE REACH REMOVAL ACTION
 - AREA SUBJECT TO NATURAL RESOURCE RESTORATION/ENHANCEMENT
 - AREA SUBJECT TO INSTALLATION OF VEGETATIVE ENGINEERED BARRIER AND NATURAL RESOURCE RESTORATION/ENHANCEMENT
 - MONITORING WELL
 - NAPL/GROUNDWATER RECOVERY WELL
 - UNDERGROUND WATER UTILITY LOCATION (TERMINOUS NOT SHOWN)
 - UNDERGROUND ELECTRIC UTILITY LOCATION
 - UNDERGROUND TELEPHONE UTILITY LOCATION
 - UNDERGROUND GAS UTILITY LOCATION
 - STORM DRAIN UTILITY LOCATION
 - SANITARY SEWER LOCATION
 - OVERHEAD ELECTRIC UTILITY LOCATION
 - APPROXIMATE UNDERGROUND UTILITY LINE LOCATION (NOT FROM SURVEY)
 - LIGHT POLE
 - CATCH BASIN
 - DRAIN MANHOLE
 - UTILITY POLE
 - GAS VALVE
 - FIRE HYDRANT
 - WATER SHUTOFF
 - SUB-AREA 201A
 - DIVIDING LINE SEPARATING THE NORTHERN PORTION OF 19-8-1 FROM THE SOUTHERN PORTION

- NOTES:**
- MAPPING IS BASED ON SITE SURVEY BY HILL ENGINEERS, ARCHITECTS & PLANNERS INC., DATED 2/5/04 AND FROM AERIAL PHOTOGRAPHS AND PHOTOGRAMMETRIC MAPPING BY LOCKWOOD MAPPING, INC. - FLOWN IN APRIL 1990 (EDGE OF RIVER).
 - UTILITY LOCATIONS ARE APPROXIMATE AND ALL UTILITIES MAY NOT BE SHOWN.
 - CONTRACTOR TO COORDINATE WITH "DIGSAFE" FOR LOCATING/IDENTIFYING UTILITIES. NO SITE WORK WILL BE PERFORMED BY THE CONTRACTOR UNTIL UTILITY INVESTIGATION BY "DIGSAFE" HAS BEEN COMPLETED.
 - WELL LOCATIONS HAVE BEEN SURVEYED TO KNOWN PHYSICAL FEATURES BY BLASLAND, BOUCK & LEE, INC. AND HILL ENGINEERS, ARCHITECTS, PLANNERS, INC. LOCATIONS SHOWN ON THIS MAPPING ARE APPROXIMATE.
 - EXISTING CONTOUR INTERVAL IS 1 FOOT.

X: 40490X00, X01.DWG
L: ON=*, OFF=*REF*
P: PAGESET/PLT-CDL
8/30/05 SYR-85-GMS LAF GJD
N/40490006/201A/RDRA/40490G03.DWG

Graphic Scale
1"=80'
80' 0 80' 160'

THIS DRAWING WAS PREPARED AT THE SCALE INDICATED IN THE TITLE BLOCK. INACCURACIES IN THE STATED SCALE MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED. USE THE GRAPHIC SCALE BAR IN THE TITLE BLOCK TO DETERMINE THE ACTUAL SCALE OF THIS DRAWING.

Date	Revisions	Init

THIS DRAWING IS THE PROPERTY OF BLASLAND, BOUCK & LEE, INC. AND MAY NOT BE REPRODUCED OR ALTERED IN WHOLE OR IN PART WITHOUT THE EXPRESS WRITTEN PERMISSION OF BLASLAND, BOUCK & LEE, INC.

Professional Engineer's Name	JAMES M. NUSS
Professional Engineer's No.	38000
State	MA
Date Signed	
Project Mgr.	DAJ
Designed by	MJB
Drawn by	GMS



GENERAL ELECTRIC COMPANY • PITTSFIELD, MASSACHUSETTS
RD/RA WORK PLAN FOR THE LYMAN STREET AREA

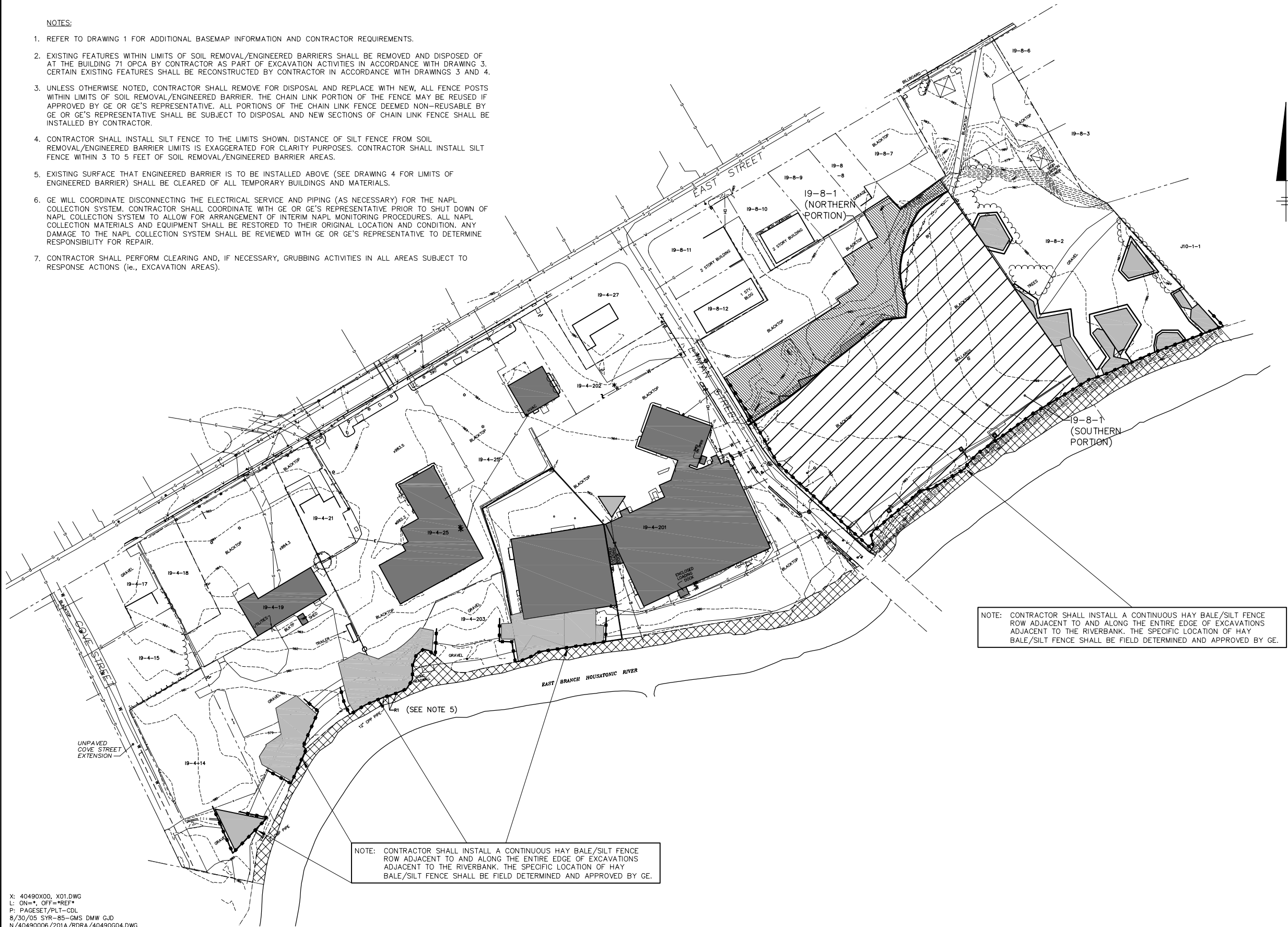
EXISTING SITE PLAN

TECHNICAL DRAWINGS

BBL Project No. 404.90
Date SEPTEMBER 2005
Blasland, Bouck & Lee, Inc. Corporate Headquarters 6723 Towpath Road Syracuse, NY 13214 315-446-9120

NOTES:

1. REFER TO DRAWING 1 FOR ADDITIONAL BASEMAP INFORMATION AND CONTRACTOR REQUIREMENTS.
2. EXISTING FEATURES WITHIN LIMITS OF SOIL REMOVAL/ENGINEERED BARRIERS SHALL BE REMOVED AND DISPOSED OF AT THE BUILDING 71 OPCA BY CONTRACTOR AS PART OF EXCAVATION ACTIVITIES IN ACCORDANCE WITH DRAWING 3. CERTAIN EXISTING FEATURES SHALL BE RECONSTRUCTED BY CONTRACTOR IN ACCORDANCE WITH DRAWINGS 3 AND 4.
3. UNLESS OTHERWISE NOTED, CONTRACTOR SHALL REMOVE FOR DISPOSAL AND REPLACE WITH NEW, ALL FENCE POSTS WITHIN LIMITS OF SOIL REMOVAL/ENGINEERED BARRIER. THE CHAIN LINK PORTION OF THE FENCE MAY BE REUSED IF APPROVED BY GE OR GE'S REPRESENTATIVE. ALL PORTIONS OF THE CHAIN LINK FENCE DEEMED NON-REUSABLE BY GE OR GE'S REPRESENTATIVE SHALL BE SUBJECT TO DISPOSAL AND NEW SECTIONS OF CHAIN LINK FENCE SHALL BE INSTALLED BY CONTRACTOR.
4. CONTRACTOR SHALL INSTALL SILT FENCE TO THE LIMITS SHOWN. DISTANCE OF SILT FENCE FROM SOIL REMOVAL/ENGINEERED BARRIER LIMITS IS EXAGGERATED FOR CLARITY PURPOSES. CONTRACTOR SHALL INSTALL SILT FENCE WITHIN 3 TO 5 FEET OF SOIL REMOVAL/ENGINEERED BARRIER AREAS.
5. EXISTING SURFACE THAT ENGINEERED BARRIER IS TO BE INSTALLED ABOVE (SEE DRAWING 4 FOR LIMITS OF ENGINEERED BARRIER) SHALL BE CLEARED OF ALL TEMPORARY BUILDINGS AND MATERIALS.
6. GE WILL COORDINATE DISCONNECTING THE ELECTRICAL SERVICE AND PIPING (AS NECESSARY) FOR THE NAPL COLLECTION SYSTEM. CONTRACTOR SHALL COORDINATE WITH GE OR GE'S REPRESENTATIVE PRIOR TO SHUT DOWN OF NAPL COLLECTION SYSTEM TO ALLOW FOR ARRANGEMENT OF INTERIM NAPL MONITORING PROCEDURES. ALL NAPL COLLECTION MATERIALS AND EQUIPMENT SHALL BE RESTORED TO THEIR ORIGINAL LOCATION AND CONDITION. ANY DAMAGE TO THE NAPL COLLECTION SYSTEM SHALL BE REVIEWED WITH GE OR GE'S REPRESENTATIVE TO DETERMINE RESPONSIBILITY FOR REPAIR.
7. CONTRACTOR SHALL PERFORM CLEARING AND, IF NECESSARY, GRUBBING ACTIVITIES IN ALL AREAS SUBJECT TO RESPONSE ACTIONS (ie., EXCAVATION AREAS).

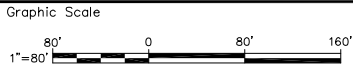


- LEGEND**
- APPROXIMATE RAA BOUNDARY
 - PARCEL BOUNDARY
 - 19-4-25 PARCEL ID
 - ELEVATION CONTOUR (5 FOOT CONTOURS IN BOLD)
 - GUARD RAIL
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 - WOODEN FENCE
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 - AREA SUBJECT TO INSTALLATION OF VEGETATIVE ENGINEERED BARRIER AND NATURAL RESOURCE RESTORATION/ENHANCEMENT
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 - UNDERGROUND ELECTRIC UTILITY LOCATION
 - UNDERGROUND TELEPHONE UTILITY LOCATION
 - UNDERGROUND GAS UTILITY LOCATION
 - STORM DRAIN UTILITY LOCATION
 - SANITARY SEWER LOCATION
 - OVERHEAD ELECTRIC UTILITY LOCATION
 - APPROXIMATE UNDERGROUND UTILITY LINE LOCATION (NOT FROM SURVEY)
 - LIGHT POLE
 - CATCH BASIN
 - DRAIN MANHOLE
 - UTILITY POLE
 - GAS VALVE
 - FIRE HYDRANT
 - WATER SHUTOFF
 - SUB-AREA 201A
 - LIMITS OF SOIL REMOVAL
 - HAY BALES/SILT FENCE
 - SILT FENCE

NOTE: CONTRACTOR SHALL INSTALL A CONTINUOUS HAY BALE/SILT FENCE ROW ADJACENT TO AND ALONG THE ENTIRE EDGE OF EXCAVATIONS ADJACENT TO THE RIVERBANK. THE SPECIFIC LOCATION OF HAY BALE/SILT FENCE SHALL BE FIELD DETERMINED AND APPROVED BY GE.

NOTE: CONTRACTOR SHALL INSTALL A CONTINUOUS HAY BALE/SILT FENCE ROW ADJACENT TO AND ALONG THE ENTIRE EDGE OF EXCAVATIONS ADJACENT TO THE RIVERBANK. THE SPECIFIC LOCATION OF HAY BALE/SILT FENCE SHALL BE FIELD DETERMINED AND APPROVED BY GE.

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8/30/05 SYR-85-GMS DMW GJD
N/40490006/201A/RDRA/40490G04.DWG



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Professional Engineer's Name	JAMES M. NUSS
Professional Engineer's No.	38000
State	MA
Date Signed	
Project Mgr.	DAJ
Designed by	MJB
Drawn by	GJD

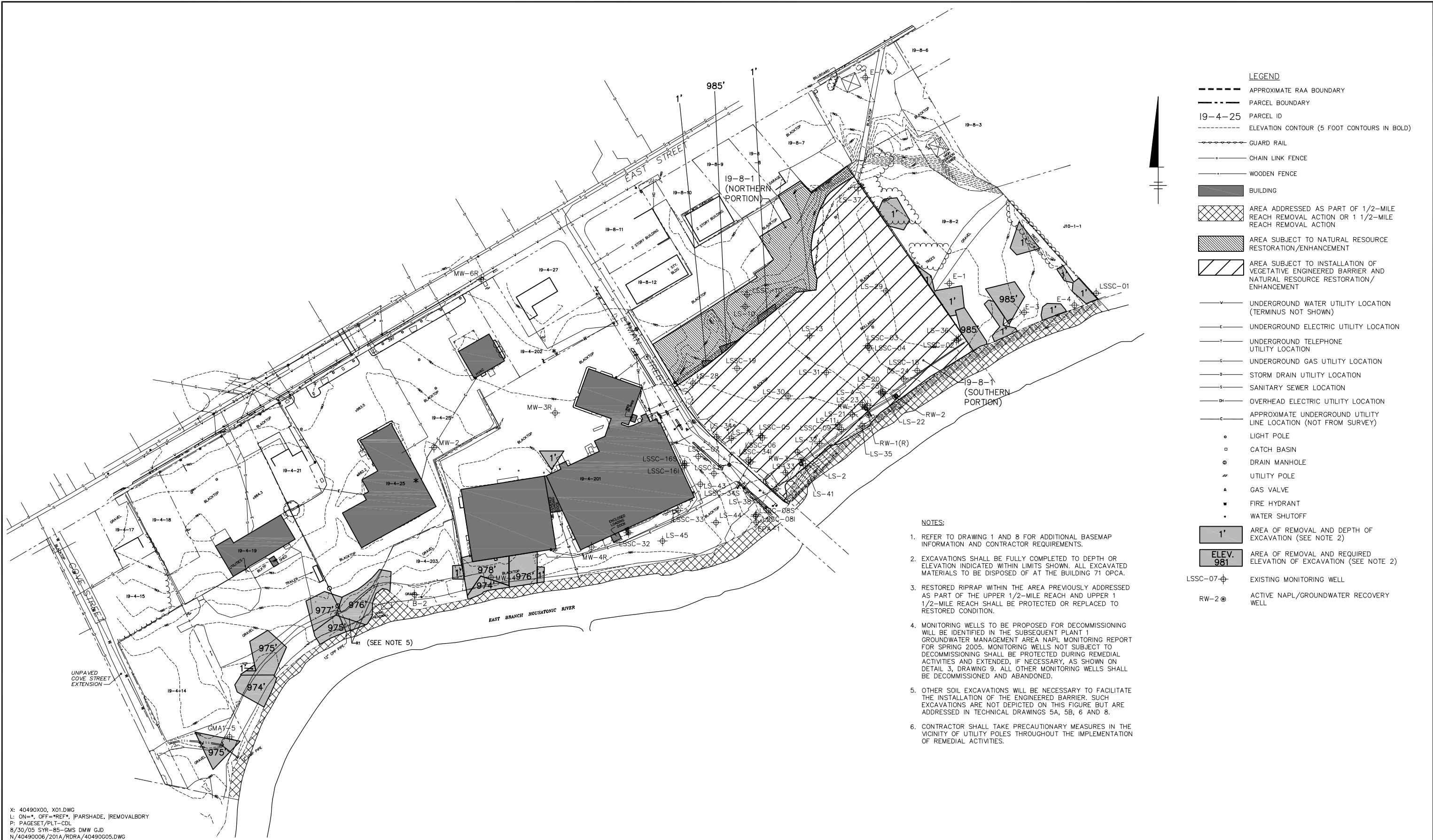
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engineers, scientists, economists

GENERAL ELECTRIC COMPANY • PITTSFIELD, MASSACHUSETTS
RD/RA WORK PLAN FOR THE LYMAN STREET AREA

SITE PREPARATION PLAN

TECHNICAL DRAWINGS

BBL Project No. 404.90
Date SEPTEMBER 2005
Blasland, Bouck & Lee, Inc. Corporate Headquarters 6723 Towpath Road Syracuse, NY 13214 315-446-9120



- LEGEND**
- APPROXIMATE RAA BOUNDARY
 - - - PARCEL BOUNDARY
 - 19-4-25 PARCEL ID
 - ELEVATION CONTOUR (5 FOOT CONTOURS IN BOLD)
 - GUARD RAIL
 - CHAIN LINK FENCE
 - WOODEN FENCE
 - BUILDING
 - ▨ AREA ADDRESSED AS PART OF 1/2-MILE REACH REMOVAL ACTION OR 1 1/2-MILE REACH REMOVAL ACTION
 - ▩ AREA SUBJECT TO NATURAL RESOURCE RESTORATION/ENHANCEMENT
 - ▧ AREA SUBJECT TO INSTALLATION OF VEGETATIVE ENGINEERED BARRIER AND NATURAL RESOURCE RESTORATION/ENHANCEMENT
 - UNDERGROUND WATER UTILITY LOCATION (TERMINUS NOT SHOWN)
 - UNDERGROUND ELECTRIC UTILITY LOCATION
 - UNDERGROUND TELEPHONE UTILITY LOCATION
 - UNDERGROUND GAS UTILITY LOCATION
 - STORM DRAIN UTILITY LOCATION
 - SANITARY SEWER LOCATION
 - OVERHEAD ELECTRIC UTILITY LOCATION
 - APPROXIMATE UNDERGROUND UTILITY LINE LOCATION (NOT FROM SURVEY)
 - LIGHT POLE
 - CATCH BASIN
 - DRAIN MANHOLE
 - UTILITY POLE
 - ▲ GAS VALVE
 - FIRE HYDRANT
 - WATER SHUTOFF
 - 1' AREA OF REMOVAL AND DEPTH OF EXCAVATION (SEE NOTE 2)
 - ELEV. 981 AREA OF REMOVAL AND REQUIRED ELEVATION OF EXCAVATION (SEE NOTE 2)
 - LSSC-07-⊕ EXISTING MONITORING WELL
 - RW-2-⊕ ACTIVE NAPL/GROUNDWATER RECOVERY WELL

- NOTES:**
1. REFER TO DRAWING 1 AND 8 FOR ADDITIONAL BASEMAP INFORMATION AND CONTRACTOR REQUIREMENTS.
 2. EXCAVATIONS SHALL BE FULLY COMPLETED TO DEPTH OR ELEVATION INDICATED WITHIN LIMITS SHOWN. ALL EXCAVATED MATERIALS TO BE DISPOSED OF AT THE BUILDING 71 OPCA.
 3. RESTORED RIPRAP WITHIN THE AREA PREVIOUSLY ADDRESSED AS PART OF THE UPPER 1/2-MILE REACH AND UPPER 1 1/2-MILE REACH SHALL BE PROTECTED OR REPLACED TO RESTORED CONDITION.
 4. MONITORING WELLS TO BE PROPOSED FOR DECOMMISSIONING WILL BE IDENTIFIED IN THE SUBSEQUENT PLANT 1 GROUNDWATER MANAGEMENT AREA NAPL MONITORING REPORT FOR SPRING 2005. MONITORING WELLS NOT SUBJECT TO DECOMMISSIONING SHALL BE PROTECTED DURING REMEDIAL ACTIVITIES AND EXTENDED, IF NECESSARY, AS SHOWN ON DETAIL 3, DRAWING 9. ALL OTHER MONITORING WELLS SHALL BE DECOMMISSIONED AND ABANDONED.
 5. OTHER SOIL EXCAVATIONS WILL BE NECESSARY TO FACILITATE THE INSTALLATION OF THE ENGINEERED BARRIER. SUCH EXCAVATIONS ARE NOT DEPICTED ON THIS FIGURE BUT ARE ADDRESSED IN TECHNICAL DRAWINGS 5A, 5B, 6 AND 8.
 6. CONTRACTOR SHALL TAKE PRECAUTIONARY MEASURES IN THE VICINITY OF UTILITY POLES THROUGHOUT THE IMPLEMENTATION OF REMEDIAL ACTIVITIES.

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8/30/05 SYR-85-GMS DMW GJD
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Graphic Scale
80' 0 80' 160'
1"=80'

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Professional Engineer's Name JAMES M. NUSS	
Professional Engineer's No. 38000	
State MA	Date Signed
Project Mgr. DAJ	Designed by RWP
	Drawn by GMS

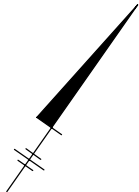


GENERAL ELECTRIC COMPANY • PITTSFIELD, MASSACHUSETTS
RD/RA WORK PLAN FOR THE LYMAN STREET AREA

EXCAVATION LIMITS

TECHNICAL DRAWINGS

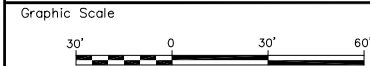
BBL Project No. 404.90	3
Date SEPTEMBER 2005	
Blasland, Bouck & Lee, Inc. Corporate Headquarters 6723 Towpath Road Syracuse, NY 13214 315-446-9120	



- LEGEND**
- PARCEL BOUNDARY
 - EASEMENT
 - J9-23-12 PROPERTY PARCEL ID
 - EXISTING INDEX ELEVATION CONTOUR
 - EXISTING INTERMEDIATE ELEVATION CONTOUR
 - TOP OF BANK
 - GRADE BREAK
 - LIMITS OF SUBGRADE GRADING
 - 990 PROPOSED CONTOUR (SEE NOTE 2)
 - 984.5 X PROPOSED SPOT ELEVATION
 - OH OVERHEAD WIRES
 - S SANITARY SEWER
 - D D STORM DRAIN
 - W UNDERGROUND WATER UTILITY
 - G G UNDERGROUND GAS UTILITY
 - E UNDERGROUND ELECTRIC UTILITY
 - BUSHES/HEDGE
 - DRAIN MANHOLE
 - UTILITY POLE
 - AREA SUBJECT TO NATURAL RESOURCE RESTORATION/ENHANCEMENT
 - AREA SUBJECT TO VEGETATIVE ENGINEERED BARRIER AND NATURAL RESOURCE RESTORATION/ENHANCEMENT
 - 1 6
 - GUARD RAIL (SEE NOTE 6)
 - CHAIN LINK FENCE
 - 8 6
 - PROPOSED ACCESS ROAD
 - AREA PREVIOUSLY ADDRESSED AS PART OF 1/2-MILE OR 1 1/2-MILE REACH REMOVAL ACTIONS

- NOTE:**
- REFER TO DRAWING 1 AND 8 FOR ADDITIONAL BASEMAP INFORMATION AND CONTRACTOR REQUIREMENTS.
 - PROPOSED AND EXISTING CONTOUR INTERVAL EQUALS 1 FOOT.
 - PROPOSED GRADES REPRESENT TOP OF COMPLETED SUBGRADE (i.e., BOTTOM OF ENGINEERED BARRIER GEOSYNTHETICS).
 - REFER TO DRAWING 2 (NOTE 6) FOR DESCRIPTION OF NAPL COLLECTION SYSTEM MODIFICATION ACTIVITIES.
 - REFER TO DRAWINGS 5B, 6, AND 7 FOR ANCHOR TRENCH AND LATERAL COLLECTION PIPE INFORMATION.
 - GUARD RAIL SHALL BE REMOVED AND DISPOSED OF AT THE BUILDING 71 OPCA BEFORE CONSTRUCTION OF ENGINEERED BARRIER SUBGRADE.

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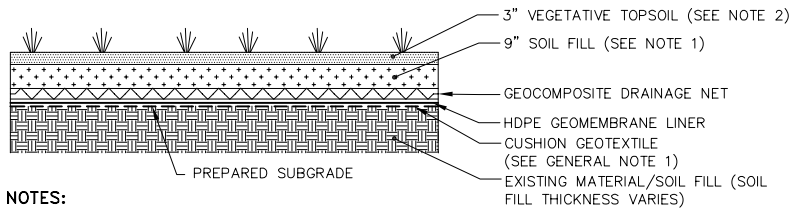
Professional Engineer's Name JAMES M. NUSS		
Professional Engineer's No. 38000		
State MA	Date Signed	
Project Mgr. DAJ	Designed by	Drawn by NES

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GENERAL ELECTRIC COMPANY • PITTSFIELD, MASSACHUSETTS
RD/RA WORK PLAN FOR THE LYMAN STREET AREA
**ENGINEERED BARRIER
SUBGRADE PLAN**
TECHNICAL DRAWINGS

BBL Project No. 404.90
Date SEPTEMBER 2005
Blasland, Bouck & Lee, Inc. Corporate Headquarters 6723 Towpath Road Syracuse, NY 13214 315-446-9120

5A

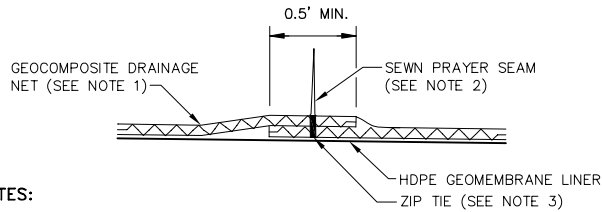


NOTES:

1. AT CONTRACTOR'S DISCRETION AND EXPENSE, SOIL FILL MAY BE REPLACED WITH TOPSOIL. ADDITIONAL SOIL FILL THICKNESS REQUIRED ADJACENT TO ACCESS ROAD ENGINEERED BARRIER.
2. TOPSOIL SHALL BE VEGETATED IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS.

VEGETATIVE ENGINEERED BARRIER

NOT TO SCALE

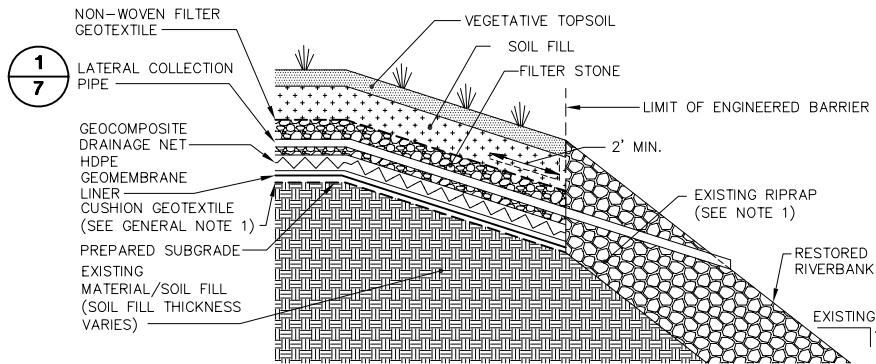


NOTES:

1. ALL GEOCOMPOSITE SHALL SHINGLE DOWNSLOPE.
2. THE UPPER GEOTEXTILE COMPONENT OF THE GEOCOMPOSITE LAYER SHALL BE PEELED BACK SO THAT A PRAYER SEAM MAY BE SEWN ABOVE THE GEOCOMPOSITE OVERLAP.
3. IF GEOTEXTILE IS UNABLE TO BE PEELED BACK WITHOUT CAUSING DAMAGE, A PATCH OF GEOTEXTILE SHALL BE HEAT BONDED TO THE TOP GEOTEXTILE LAYER OVER THE SEAM.
4. ZIP TIES SHALL BE PLACED EVERY 5' ALONG ADJACENT PANELS AND EVERY 6" ALONG BUTT SEAMS AND IN ANCHOR TRENCHES.

TYPICAL GEOCOMPOSITE SEAM

NOT TO SCALE

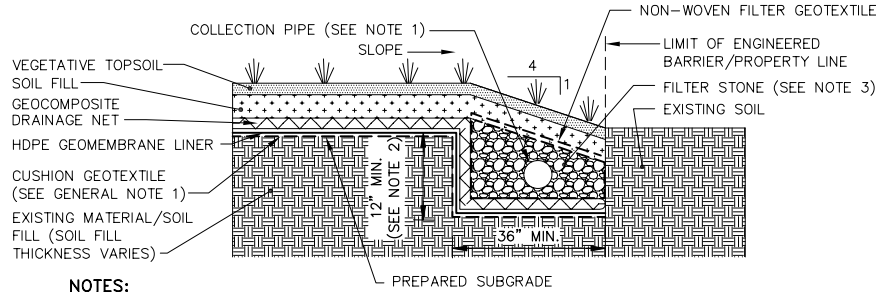


NOTES:

1. CONTRACTOR SHALL MINIMIZE DISTURBANCE OF EXISTING RIPRAP DURING INSTALLATION OF ENGINEERED BARRIER. DISTURBED RIPRAP TO BE REPLACED TO ORIGINAL LOCATION.

RIPRAP/SWALE BARRIER TERMINATION

NOT TO SCALE

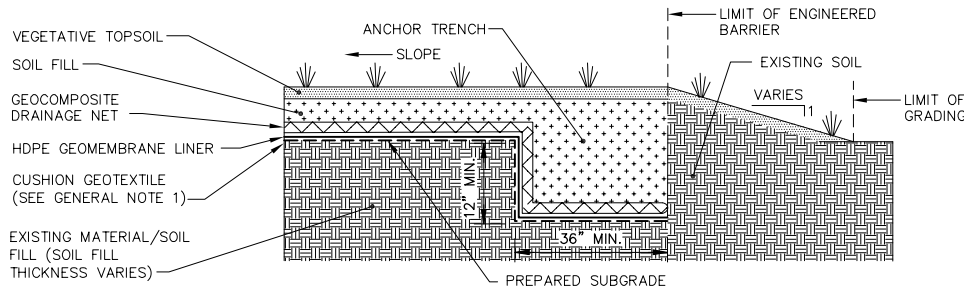


NOTES:

1. COLLECTION PIPE SHALL BE 6"Ø PERFORATED SMOOTH-BORE CORRUGATED HDPE.
2. ANCHOR TRENCH DEPTH MAY EXCEED 12-INCH AS NECESSARY TO ACHIEVE COLLECTION PIPE INVERTS SHOWN ON DRAWINGS 5 AND 6.
3. FILTER STONE SHALL BE WRAPPED IN NON-WOVEN GEOTEXTILE. NON-WOVEN GEOTEXTILE SHALL BE OVERLAPPED AS SHOWN.

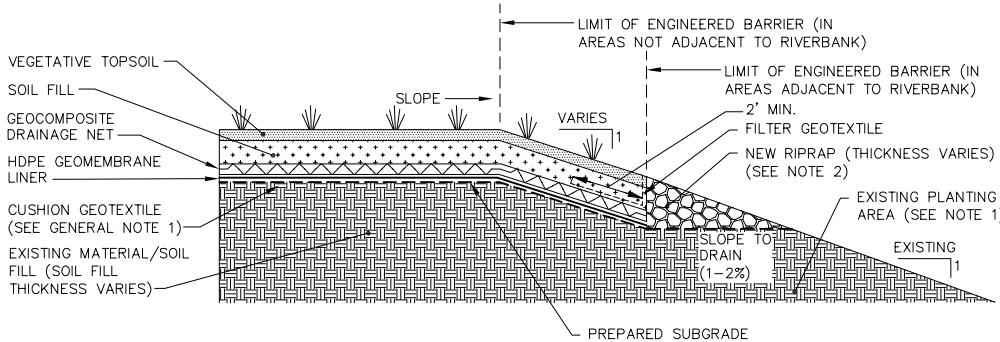
ABOVE-GRADE DRAINAGE ANCHOR TRENCH

NOT TO SCALE



ABOVE-GRADE ANCHOR TRENCH TYPE I

NOT TO SCALE

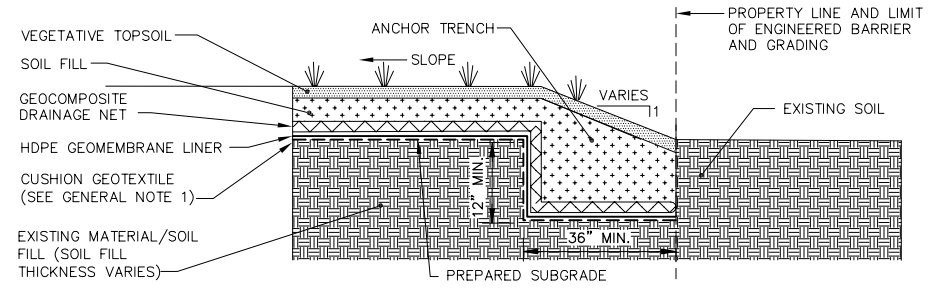


NOTES:

1. CONTRACTOR SHALL MINIMIZE DISTURBANCE OF EXISTING PLANTING AREA DURING INSTALLATION OF ENGINEERED BARRIER. DISTURBED PLANTING AREA TO BE REPLACED TO ORIGINAL LOCATION.
2. NEW RIPRAP TO BE PROVIDED ALONG ENTIRE ABOVE-GRADE TERMINATION AT THE RIVERBANK.

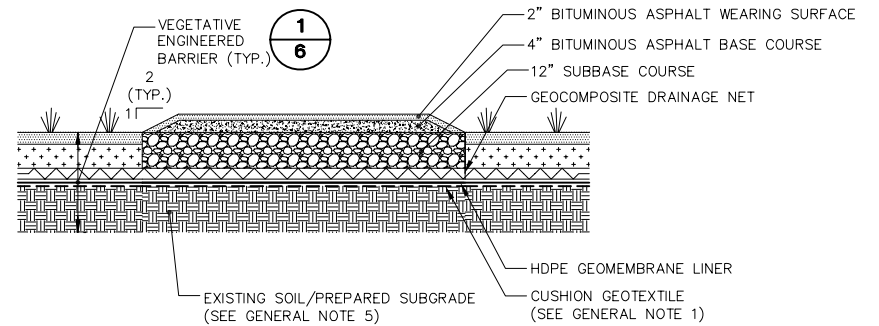
BARRIER TERMINATION

NOT TO SCALE



ABOVE-GRADE ANCHOR TRENCH TYPE II

NOT TO SCALE



ACCESS ROAD

NOT TO SCALE

GENERAL NOTES:

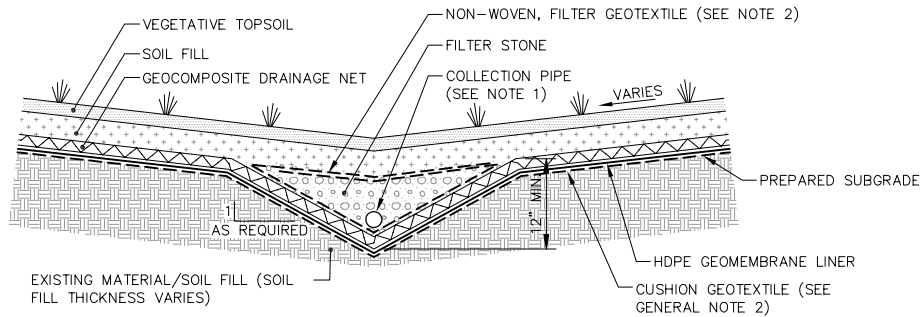
1. NON-WOVEN CUSHION GEOTEXTILE IS REQUIRED WHERE COVER IS INSTALLED ABOVE EXISTING SOIL/PAVEMENT.
2. GEOSYNTHETICS ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY.
3. "ABOVE-GRADE" REFERS TO ENGINEERED BARRIERS THAT ARE CONSTRUCTED ON TOP OF EXISTING GRADE.
4. RIPRAP SHALL BE COMPOSED OF CRUSHED ROCK AND HAVE $D_{min} = 3"$, $D_{50} = 4"$, $D_{max} = 6"$.

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Graphic Scale						Professional Engineer's Name JAMES M. NUSS		<div><div>BBL</div><div>BLASLAND, BOUCK & LEE, INC.</div><div>engineers, scientists, economists</div></div>		<div><div>GENERAL ELECTRIC COMPANY • PITTSFIELD, MASSACHUSETTS</div><div>RD/RA WORK PLAN FOR THE LYMAN STREET AREA</div></div>		BBL Project No. 404.90		6	
NOT TO SCALE						Professional Engineer's No. 38000						Date SEPTEMBER 2005			
						State MA						Date Signed			
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														TECHNICAL DRAWINGS	

DETAILS

TECHNICAL DRAWINGS



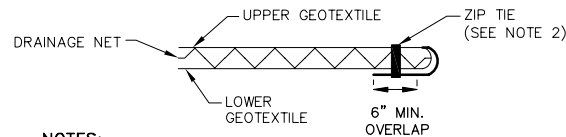
NOTES:

1. COLLECTION PIPE SHALL BE 6"Ø PERFORATED SMOOTH BORE CORRUGATED HDPE.
2. GEOTEXTILE TO BE OVERLAPPED FULL WIDTH OF TRENCH.

LATERAL COLLECTION PIPE

NOT TO SCALE

1



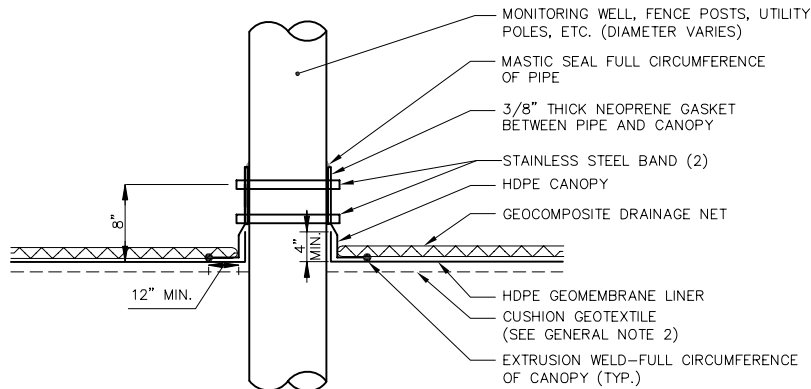
NOTES:

1. DRAINAGE NET AND LOWER GEOTEXTILE SHALL BE CUT SO THAT THE UPPER GEOTEXTILE MAY BE WRAPPED AROUND THE END OF THE GEOCOMPOSITE.
2. ZIP TIES SHALL BE PLACED EVERY 5' ALONG THE EDGES OF THE GEOCOMPOSITE.

GEOCOMPOSITE TERMINATION

NOT TO SCALE

2



NOTES:

1. CERTAIN COVER MATERIALS (i.e., SOIL FILL, TOPSOIL/ASPHALT) NOT SHOWN FOR CLARITY.

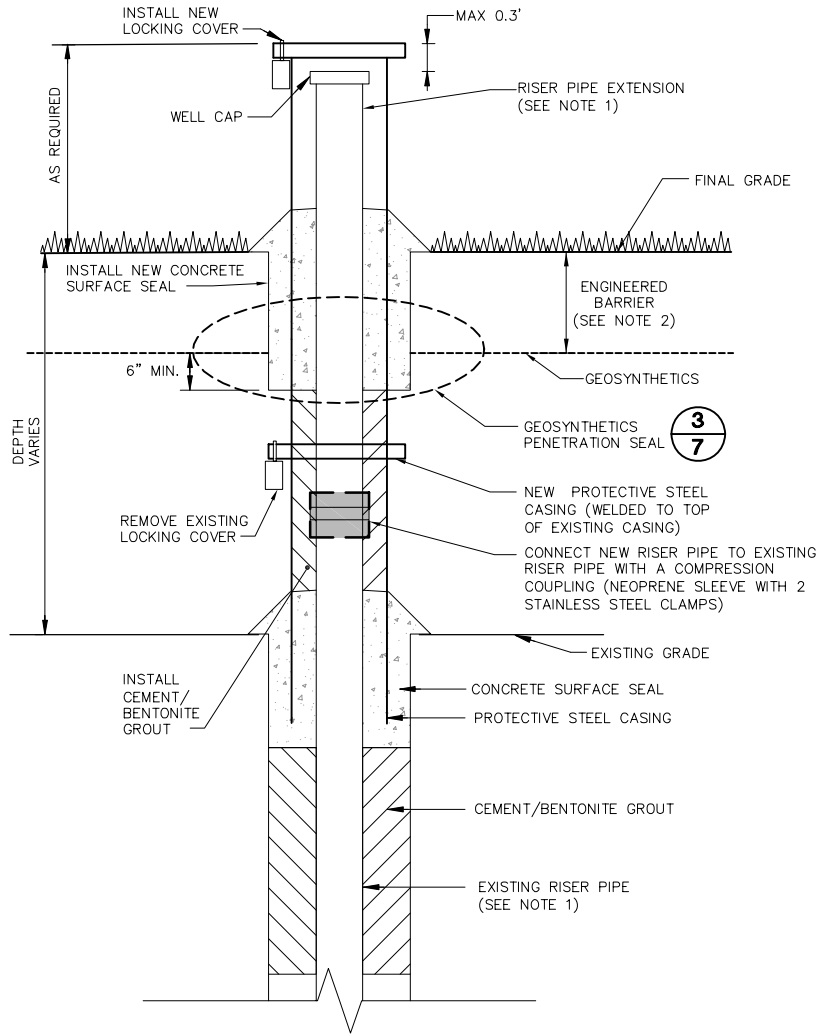
GEOSYNTHETICS PENETRATION SEAL

NOT TO SCALE

3

GENERAL NOTES:

1. GEOSYNTHETICS ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY.
2. NON-WOVEN CUSHION GEOTEXTILE IS REQUIRED WHERE COVER IS INSTALLED ABOVE EXISTING SOIL/PAVEMENT.



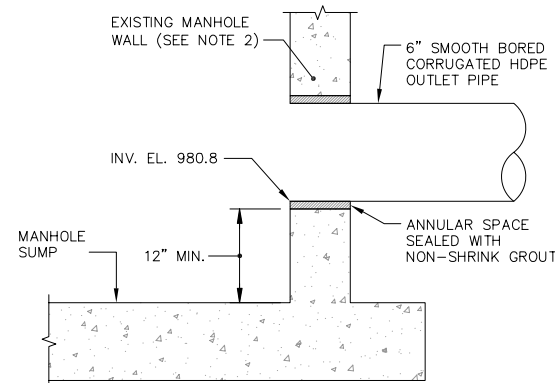
NOTE:

1. RISER PIPE AND STEEL CASING SIZES AND TYPES MAY DIFFER FOR EACH WELL. NEW WELL EXTENSION MATERIALS TO BE OF THE SAME SIZE AND TYPE AS EXISTING.
2. COVER MATERIALS NOT SHOWN FOR CLARITY.

TYPICAL MONITORING WELL EXTENSION

NOT TO SCALE

4



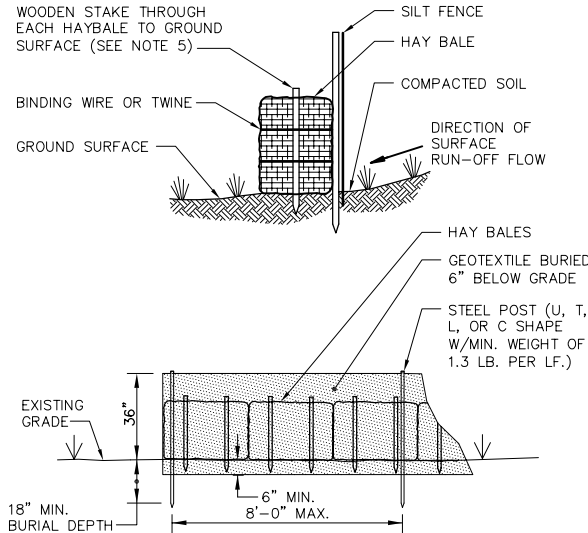
NOTE:

1. MANHOLE PENETRATION SHALL BE CREATED USING APPROPRIATE EQUIPMENT WHICH MINIMIZES THE POTENTIAL FOR DAMAGE TO THE EXISTING MANHOLE STRUCTURE. DAMAGE (IF ANY) TO THE MANHOLE SHALL BE REPAIRED TO ITS ORIGINAL CONDITION.
2. THE CONTRACTOR SHALL VERIFY THE CONDITION OF THE EXISTING MANHOLE CONSTRUCTION TO DETERMINE FEASIBILITY FOR CONNECTION.

MANHOLE CONNECTION

NOT TO SCALE

5



NOTES:

1. THE HAYBALES WILL REMAIN IN PLACE UNTIL ALL EXCAVATED MATERIAL HAS BEEN REMOVED FROM THE SITE.
2. SEDIMENT DEPOSITS SHALL BE REMOVED AS NECESSARY TO PREVENT DAMAGE TO THE HAYBALE/SILT FENCE.
3. HAY BALES/SILT FENCE WILL BE REMOVED BY THE CONTRACTOR WHEN REQUESTED BY GE OR GE'S REPRESENTATIVE. CONTRACTOR SHALL RESTORE SURFACE COVER.
4. THE CONTRACTOR SHALL MAINTAIN THE INTEGRITY OF THE HAY BALES/SILT FENCING AS LONG AS THEY ARE NECESSARY.
5. FOR HAYBALES PLACED ON ASPHALT, NO WOODEN STAKES SHALL BE USED. SOIL SHALL BE MOUNDED AGAINST THE BACKSIDE OF THE HAYBALE.

HAY BALE/SILT FENCE

NOT TO SCALE

6

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Graphic Scale
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Professional Engineer's Name JAMES M. NUSS	Project Mgr. DAJ
Professional Engineer's No. 38000	Designed by RWP
State MA	Drawn by NES
Date Signed	

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GENERAL ELECTRIC COMPANY • PITTSFIELD, MASSACHUSETTS
RD/RA WORK PLAN FOR THE LYMAN STREET AREA

DETAILS

TECHNICAL DRAWINGS

BBL Project No. 404.90	7
Date SEPTEMBER 2005	
Blasland, Bouck & Lee, Inc. Corporate Headquarters 6723 Towpath Road Syracuse, NY 13214 315-446-9120	

1. THE SOILS SUBJECT TO EXCAVATION AND HANDLING POTENTIALLY CONTAIN PCBs AND OTHER HAZARDOUS CONSTITUENTS, AND SHOULD BE HANDLED IN ACCORDANCE WITH APPLICABLE REGULATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEVELOPING AND IMPLEMENTING APPROPRIATE HEALTH AND SAFETY MEASURES FOR ITS EMPLOYEES AND SUBCONTRACTORS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING SURVEY CONTROL TO VERIFY EXISTING GRADES, POST-EXCAVATION ELEVATIONS, AND FOR ENGINEERED BARRIER INSTALLATION ACTIVITIES. GE WILL IDENTIFY LOCATION(S) AND ELEVATION(S) OF SUITABLE BENCHMARKS TO BE USED FOR SURVEY CONTROL.
3. THE DRAWINGS MAY NOT INDICATE ALL SURFACE FEATURES SUBJECT TO REPLACEMENT AS PART OF SITE RESTORATION ACTIVITIES. THIS WILL NOT RELIEVE THE CONTRACTOR FROM REMOVING AND REPLACING (IF NECESSARY) ANY AND ALL SUCH ITEMS AT NO ADDITIONAL COST TO GE.
4. LOCATIONS OF UNDERGROUND UTILITIES AND STRUCTURES ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL (SHOWN OR NOT SHOWN) ABOVE AND BELOW GROUND UTILITIES AND STRUCTURES THAT MAY EXIST WITHIN THE PROJECT LIMITS PRIOR TO COMMENCEMENT OF WORK.
5. THE CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE UTILITY COMPANIES FOR THE TEMPORARY PROTECTION OF (AND/OR REMOVAL AND REPLACEMENT, AS NECESSARY, AS DETERMINED BY THE APPROPRIATE UTILITY COMPANY) ANY UTILITY POLES, GUY WIRES, UNDERGROUND UTILITIES, AND/OR OVERHEAD WIRES THAT FALL WITHIN THE LIMITS OF EXCAVATION.
6. EXCAVATION LIMITS SHOWN ON THE TECHNICAL DRAWINGS REPRESENT SOILS THAT REQUIRE REMOVAL TO ACHIEVE THE NECESSARY REMOVAL ACTION OUTCOME. ADDITIONAL REMOVAL BEYOND THAT SHOWN MAY BE REQUIRED TO FACILITATE CONSTRUCTION ACCESS, RESTORATION, ETC.
7. THE CONTRACTOR SHALL TAKE ALL APPROPRIATE MEASURES TO AVOID DAMAGE TO STRUCTURES THAT ARE NOT SUBJECT TO REMOVAL AND REPLACEMENT AS PART OF THIS CONTRACT. THE CONTRACTOR SHALL REPAIR ANY STRUCTURAL OR EXTERNAL DAMAGES TO SUCH STRUCTURES AT NO ADDITIONAL COST TO GE.
8. THE CONTRACTOR SHALL COORDINATE SITE ACTIVITIES TO AVOID INFRINGEMENT UPON NORMAL TRAFFIC FLOW ON ADJACENT ROADWAYS.
9. ABOVEGROUND PORTIONS OF ITEMS SUBJECT TO REMOVAL AND REPLACEMENT TO ACCOMMODATE EXCAVATION ACTIVITIES (E.G., FENCING, ETC.) MAY BE SALVAGED FOR REUSE WITH APPROVAL BY GE. APPROVED SALVAGED MATERIALS MAY BE USED WHEN RECONSTRUCTING THESE ITEMS. BELOW-GRADE COMPONENTS AND/OR COMPONENTS THAT HAVE CONTACTED SOILS SUBJECT TO EXCAVATION SHALL BE HANDLED AND DISPOSED OF WITH THE ASSOCIATED SOILS. ALL SUCH ITEMS SHALL BE BROKEN INTO SUFFICIENTLY SMALL PIECES (IF NECESSARY) TO BE ACCEPTABLE FOR OFF-SITE TRANSPORT AND DISPOSAL WITH THE SOILS. BELOW-GRADE COMPONENTS SHALL BE REPLACED AS PART OF SITE RESTORATION ACTIVITIES.
10. THE CONTRACTOR SHALL PROVIDE A WATER TRUCK AND APPROPRIATE EQUIPMENT FOR DUST SUPPRESSION WITHIN SOIL EXCAVATION, STAGING, AND LOADING AREAS. THESE AREAS SHALL BE WATERED BASED ON VISUAL OBSERVATIONS, THE RESULTS OF AIR MONITORING ACTIVITIES, AND/OR DIRECTION BY GE OR GE'S REPRESENTATIVE.
11. THE CONTRACTOR SHALL ENSURE PERIMETER AIR MONITORING (TO BE PERFORMED BY OTHERS) IS BEING PERFORMED DURING EXCAVATION OR OTHER EXISTING SOIL HANDLING ACTIVITIES.
12. THE HORIZONTAL LIMITS OF EXCAVATION ACTIVITIES WILL BE PHYSICALLY DELINEATED IN THE FIELD BY THE CONTRACTOR. WITHIN THESE LIMITS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR EXECUTING AND VERIFYING THE SPECIFIED DEPTH OR ELEVATION OF EXCAVATION IN ACCORDANCE WITH OSHA REQUIREMENTS.
13. THE CONTRACTOR MAY CONSTRUCT TEMPORARY SOIL STOCKPILES FOR EXCAVATED MATERIALS AT AREAS APPROVED BY GE. THE CONTRACTOR WILL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING PERIMETER EROSION AND SEDIMENTATION CONTROLS (IN THE FORM OF SILT FENCING, AND/OR HAY BALES, RUN-OFF WATER COLLECTION, AND DUST SUPPRESSION IN THIS AREA. THE CONTRACTOR SHALL COVER THE STOCKPILED MATERIALS WITH POLYETHYLENE LINERS WHEN NO ACTIVITIES ARE BEING PERFORMED IN THE STOCKPILE AREA.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TRANSPORTING EXCAVATED/REMOVED MATERIALS TO THE BUILDING 71 OPCA. THE CONTRACTOR WILL BE REQUIRED TO PROVIDE THREE DAYS NOTICE TO GE PRIOR TO TRANSPORTATION OF EXCAVATED/STOCKPILED MATERIALS TO THE OPCA. THE CONTRACTOR IS REQUIRED TO PROVIDE NO LESS THAN 32 TRUCK LOADS OF MATERIAL, CONSISTING OF NO LESS THAN 10 CUBIC YARDS PER LOAD, PER DAY WHEN TRANSPORTING MATERIALS TO THE OPCA FOR CONSOLIDATION.
15. CONTRACTOR SHALL INSTALL AN INTERIM COVER (E.G., POLYETHYLENE SHEETING) OVER WORK AREAS WHERE EXCAVATION ACTIVITIES ARE YET TO BE COMPLETED. THE INTERIM COVER SHALL BE PROPERLY ANCHORED TO RESIST WIND FORCES AND PREVENT STORMWATER FROM ENTERING SUCH WORK AREAS.
16. PAVEMENT SUBJECT TO PARTIAL REMOVAL SHALL BE REMOVED VIA SAW-CUT. RESTORATION SHALL MEET ALL LOCAL AND/OR STATE BUILDING CODES. CONTRACTOR SHALL OBTAIN ALL APPROPRIATE BUILDING PERMITS ASSOCIATED WITH RESTORATION ACTIVITIES.
17. WITHIN THE LIMITS OF EXCAVATION, THE CONTRACTOR SHALL RESTORE ALL PREVIOUSLY VEGETATED AREAS BY PLACING AND COMPACTING FILL MATERIALS (TO ACHIEVE A GRADE OF APPROXIMATELY 3 INCHES BELOW PRE-REMOVAL GRADE, WHERE APPROPRIATE), TOPSOIL, AND SEED. OTHER SURFACE FEATURES SHALL BE REPLACED OR RESTORED AS INDICATED.
18. UPON BACKFILLING OF EXCAVATED AREAS, THE CONTRACTOR SHALL MAINTAIN IN PLACE OR INSTALL ADDITIONAL EROSION CONTROLS IN THE LOCATIONS INDICATED ON EACH WORK SITE DRAWING. THE EROSION CONTROLS WILL BE REMOVED BY THE CONTRACTOR WHEN REQUESTED BY GE OR GE'S REPRESENTATIVE.
19. BACKFILLED AND RESTORED AREAS WILL BE SUBJECT TO FINAL SURVEY VERIFICATION (BY THE CONTRACTOR). THE CONTRACTOR SHALL REPAIR ANY ITEMS THAT ARE NOT RESTORED TO THE LOCATIONS AND/OR ELEVATIONS REQUIRED BY THIS CONTRACT.
20. THE CONTRACTOR SHALL RESTORE TO PRE-REMEDIATION CONDITIONS ALL SUPPORT AREAS THAT ARE IMPACTED BY REMEDIATION ACTIVITIES, INCLUDING EQUIPMENT AND MATERIALS STORAGE AREAS, SOIL LOADING AND STAGING AREAS, AND PARKING AREAS.
21. ALL EQUIPMENT OPERATED WITHIN THE LIMITS OF EXCAVATION SHALL BE CLEANED PRIOR TO USE OR STORAGE ELSEWHERE ON THE SITE OR TRANSPORTED OFF-SITE. A CONTAINED/LINED WHEEL WASH AREA SHALL BE PROVIDED BY THE CONTRACTOR FOR CLEANING EXCAVATION EQUIPMENT AND/OR TRANSPORTATION VEHICLES PRIOR TO THEIR REMOVAL FROM THE WORK SITE. WATER USED TO CLEAN EQUIPMENT SHALL BE RESTRICTED TO AND COLLECTED WITHIN A DESIGNATED EQUIPMENT CLEANING AREA. ALL SUCH WATERS SHALL BE CONTAINERIZED AND TRANSPORTED FOR APPROPRIATE OFF-SITE DISPOSAL/TREATMENT BY THE CONTRACTOR.
22. SELECT SITE FEATURES MAY OR MAY NOT BE SHOWN ON DRAWINGS (E.G., ADDITIONAL CONCRETE PADS, MANHOLES, ETC.). CONTRACTOR SHALL PROTECT THESE FEATURES AS REQUIRED.



NOT TO SCALE



NOTE:

1. CULVERT MUST TIE-INTO EXISTING RIPRAP ON SOUTHERN SIDE, ADDITIONAL RIPRAP COULD BE REQUIRED TO MEET EXISTING RIP-RAP.
2. COLLECTION PIPE SHALL BE 6" PERFORATED SMOOTH BORE CORRUGATED HDPE.
3. GEOTEXTILE TO BE OVERLAPPED FULL WIDTH OF TRENCH.

NOT TO SCALE

THIS DRAWING WAS PREPARED AT THE SCALE INDICATED IN THE TITLE BLOCK. INACCURACIES IN THE STATED SCALE MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED.

USE THE GRAPHIC SCALE BAR IN THE TITLE BLOCK TO DETERMINE THE ACTUAL SCALE OF THIS DRAWING.

Professional Engineer's Name JAMES M. NUSS			
Professional Engineer's No. 38000			
State MA		Date Signed	
Project Mgr. DAJ	Designed by RWP	Drawn by NES	

BBL®
BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

GENERAL NOTES AND DETAILS

TECHNICAL DRAWINGS

BBL Project No. 404.90
Date SEPTEMBER 2005
Blasland, Bouck & Lee, Inc. Corporate Headquarters 6723 Towpath Road Syracuse, NY 13214 315-446-9120

Attachment B

Technical Specifications

SECTION 1.0 - MATERIALS & PERFORMANCE SPECIFICATIONS

Section 02200 – Earthwork

Section 02207 – Restoration of Surfaces

Section 02212 – Topsoil, Seeding, and Mulch

Section 02219 – Geocomposite

Section 02222 – Fill Materials

Section 02232 – Geotextile Fabric

Section 02234 – Flexible Membrane Liner

Section 02600 – Bituminous Concrete Pavements

MATERIALS AND PERFORMANCE - SECTION 02200

EARTHWORK

PART 1 - GENERAL

1.01 DESCRIPTION

- A. All labor, materials, services, and equipment necessary to complete the earthwork activities as depicted on the Technical Drawings and/or as directed by GE or GE's Representative.
- B. Earthwork is defined to include, but is not limited to, clearing, pavement removal, rough grading, excavation for subgrades, trenching, handling and disposal of surplus materials, maintenance of excavations, removal of water, backfilling operations, embankments and fills, and compaction.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section MP-02207 – Restoration of Surfaces
- B. Section MP-02222 – Fill Materials
- C. Section 7.5.2 – Soil Removal, Material Handling, and Transportation, and Disposal
- D. Section 7.6 – Perimeter Air Monitoring

1.03 APPLICABLE CODES, STANDARDS AND SPECIFICATIONS

- A. American Society for Testing and Materials (ASTM).

1.04 SUBMITTALS

- A. Prior to earthwork activities, Contractor shall submit proposed equipment and compaction method(s).

PART 2 - PRODUCTS

See following sections.

PART 3 - EXECUTION

3.01 UNAUTHORIZED EXCAVATION

- A. The Contractor shall not be entitled to any compensation for excavations carried beyond or below the lines and subgrades prescribed on the Technical Drawings. The Contractor shall refill such unauthorized excavations at its own expense and in conformance with the provisions of this section.
- B. Should the Contractor, through negligence or for reasons of its own, carry its excavation below the designated subgrade, appropriate materials specified in Section MP-02222 - Fill Materials shall be furnished and placed as backfill in sufficient quantities to reestablish the required subgrade surface. Fill material used for backfilling shall be spread and compacted in conformance with the requirements of later subsections of this section and to the percentage compaction outlined therein. The cost of any tests required as a result of this refilling operation shall be borne by the Contractor.

- C. All material that slides, falls, or caves into the established limits of excavations due to any cause whatsoever, shall be removed and disposed of at the Contractor's expense and no extra compensation will be paid to the Contractor for any materials ordered for refilling the void areas left by the slide, fall, or cave-in.

3.02 BACKFILL MATERIALS

- A. Fill material shall be used as specified for backfill. Requirements for off-site fill material are specified in Section MP-02222 - Fill Materials.
- B. Existing on-site material, designated as "native fill" or "existing soil" material shall not be used as backfill.

3.03 GENERAL BACKFILLING REQUIREMENTS

- A. Backfill shall be started at the lowest section of the area to be backfilled.
- B. Drainage of the areas being backfilled shall be maintained at all times.
- C. Areas to be backfilled shall be inspected and approved by GE or GE's Representative prior to backfilling operations. All unsuitable materials and debris shall be removed.
- D. Backfill material shall not be placed when moisture content is too high to allow proper compaction.
- E. When material is too dry for adequate compaction, water shall be added to the extent necessary.
- F. Backfill material shall not be placed on frozen ground nor shall the material itself be frozen or contain frozen soil fragments when placed.
- G. No calcium chloride or other chemicals shall be added to prevent freezing.
- H. Material incorporated in the backfilling operation that is not in satisfactory condition shall be subject to rejection and removal at the Contractor's expense.
- I. The maximum lift thickness is 12 inches (measured prior to compaction).
- J. For backfill placed directly over geosynthetics (i.e., in areas where engineered barriers are installed), the minimum installed lift thickness is 9 inches.
- K. The Contractor shall use appropriately sized equipment and methods when placing and compacting backfill over engineered barriers so as not to damage underlying geosynthetic materials. Areas of the engineered barrier (i.e., geosynthetics) that may have been damaged during backfill installation as determined by the Contractor, GE or GE's Representative, shall be inspected and repaired, if necessary, in accordance with the technical specifications at the Contractor's expense.

3.04 METHOD OF COMPACTION

A. General

1. The Contractor shall adopt compaction methods that shall produce the degree of compaction specified herein, prevent subsequent settlement, and provide adequate support.
2. Methods used shall avoid disturbance to underlying fine-grained soils, subsurface utilities, and the geosynthetics used in the engineered barriers.
3. Hydraulic compaction by ponding or jetting shall not be permitted.
4. Backfill material shall not be left in an uncompacted state at the close of a day's construction.
5. Prior to terminating work, ridges of soil left on the final layer of compacted fill, by tractors, trucks, or other equipment used for compaction, shall be eliminated using low-pressure equipment.
6. As backfill progresses, the surface shall be graded such that no ponding of water shall occur on the surface of the fill.

B. Equipment: Unless otherwise specified on the Technical Drawings or in this RFP, equipment for compaction shall be consistent with space limitations of the work areas and the need to protect adjacent facilities.

1. Compaction of fill material in confined areas shall be accomplished by means of a drum-type, power driven, hand-guided vibratory compactor, or by hand-guided vibratory plate tampers.
2. If the proposed method does not produce the degree of compaction required, an alternate method shall be adopted until the required compaction is achieved.
3. The moisture content of backfill or fill material shall be adjusted, if necessary, to achieve the required degree of compaction.

C. Minimum Compaction Requirements

1. Unless otherwise specified on the Technical Drawings or in this RFP, the degree of compaction specified for the various items listed in Table 1 shall be the minimum allowable.
2. Unless the Contractor can successfully demonstrate that its methods shall produce the required degree of compaction, materials to be compacted shall be placed in layers not exceeding the uncompacted thicknesses listed in Table 1.
3. In-place density tests shall be required at a minimum of one test per each lift of backfill placed or at a frequency of 1 passing test per 2,500 square feet of subgrade, 100 cubic yards of soil fill, or 100 linear feet of pipe bedding, whichever results in the greatest frequency.
4. GE or GE's Representative may order additional in-place density tests to ascertain conformance with the compaction requirements shown in Table 1.

5. The Contractor shall dig test holes at no additional cost to GE when requested for the purpose of taking an in-place density test below the current fill level.
6. The Contractor shall provide free access to fill areas for the purpose of making such tests. Payment for all compaction tests shall be made by the Contractor.
7. The Contractor shall anticipate time needed due to testing procedures and shall not have claims for extra compensation occasioned by such time.
8. Minimum compaction requirements in Table 1 are expressed as a percentage of the maximum dry unit weight of the material compacted using the Modified Proctor Compaction Test (ASTM D1557).

TABLE 1		
Type of Backfill	Maximum Uncompacted Lift Thickness (inches)	Minimum Compaction (percent)
1. Subgrade - Existing Soil	Not applicable	Proof-rolling
2. Embankments and Fills (not above geosynthetics)	12	90
3. Fills (above geosynthetics)	12	Compacted by placing/grading
4. Pipe Bedding	8	92
5. Road Subbase	12	95
6. Topsoil	8	Compact by placing/grading only

Note:

1. Maximum uncompacted lift thicknesses do not apply to backfill placed directly over geosynthetics in areas receiving engineered barriers.

9. Laboratory compaction curves for the full range of soil materials shall be provided by the Contractor.
10. When proof-rolling existing (or native) soils, the layer shall be acceptable when deformations caused by substantial site equipment (e.g., roller, fully loaded dump truck) are no deeper than 1 inch. All soft or wet materials that continue to deform more than 1 inch shall be removed and replaced with suitable material and retested at the expense of the Contractor.

3.05 GRADING

- A. After the completion of all backfill operations, the Contractor shall grade the site to the lines, grades, and elevations shown on the Technical Drawings, taking into account any subsequent site restoration requirements (e.g. installation of engineered barriers).

3.06 EXISTING FACILITIES

A. General

1. Existing subsurface facilities may be encountered during construction of the work, or located in close proximity to the work.
2. These facilities may include, but are not necessarily limited to, sewers, drains, water mains, conduits and their appurtenances. These facilities may or may not be shown on the Technical Drawings. However, the sizes, locations, and heights or depths, if indicated, are only approximate

and the Contractor shall conduct its operations with caution and satisfy itself as to the accuracy of the information given. The Contractor shall not claim nor shall it be entitled to receive compensation for damages sustained by reason of the inaccuracy of the information given or by reason of its failure to properly maintain and support such structures.

3. There may be other subsurface facilities, the existence and/or location of which are not known, such as individual water and gas services, electrical conduits, sanitary and storm sewer drains, etc. The Contractor shall consult with GE or GE's Representatives of such facilities and, if possible, shall determine, prior to construction, the location and depth of any such facilities that may exist in the area to be excavated.
4. If underground facilities are known to exist in an area but their location is uncertain, the Contractor shall exercise reasonable care in its excavation technique to avoid damage to them.
5. The Contractor shall notify Massachusetts DIGSAFE at least 72 hours prior to any site work.

B. Notification and Protection Procedures

1. Except where superseded by state or local regulations, or in the absence of any applicable regulations, the Contractor shall, at a minimum, include the following procedures in its operations:
 - a. Prior to Excavating:
 - 1) Determine correct field location of all nearby underground facilities or arrange for Representatives of the utilities to locate them.
 - 2) Notify owners of nearby underground facilities when excavation is to take place, allowing them reasonable time to institute precautionary procedures or preventive measures which they deem necessary for protection of their facilities.
 - 3) In cooperation with owners of nearby facilities, provide temporary support and protection of those underground facilities that may be especially vulnerable to damage by virtue of their physical condition or location, or those that could create hazardous conditions if damaged.
 - b. Immediately notify any utility owner of any damage to its underground facilities resulting from the Contractor's operations, and arrange for repairs to be made as soon as possible.
 - c. In case of any emergency the Contractor shall follow the Contingency and Emergency Procedures Plan outlined in GE's Project Operations Plan. This document will be provided upon request of the Contractor.

3.07 OTHER REQUIREMENTS

A. Unfinished work

1. When, for any reason, the work is to be left unfinished, all trenches and excavations shall be filled and all roadways and watercourses left unobstructed with their surfaces in a safe and satisfactory condition. The surface of all roadways shall have temporary pavement.

B. Hauling Material on Street

1. When hauling material over the streets or pavement, the Contractor shall provide suitably tight-sealing vehicles so as to prevent deposits on the streets or pavements. In all cases where any materials are dropped from the vehicles, the Contractor shall clean up the same as often as required to keep the crosswalks, streets, and pavements clean and free from dirt, mud, stone, and other hauled material.
2. When hauling materials that contain PCBs or other hazardous constituents, the Contractor shall abide by all applicable federal, state, and local codes, including, but not limited to, manifesting and placarding (if necessary).

C. Dust Control

1. It shall be the sole responsibility of the Contractor to control the dust created by any and all of its operations to such a degree that it will not endanger the safety and welfare of the general public.

- END OF SECTION -

MATERIALS AND PERFORMANCE - SECTION 02207

RESTORATION OF SURFACES

PART 1 - GENERAL

1.01 DESCRIPTION

- A. All types of surfaces, structures and appurtenances disturbed, damaged, or destroyed during the performance of the work under or as a result of the operations of the Contract, shall be restored and maintained, as specified herein or as directed by GE or GE's Representative.
- B. The quality of materials and the performance of work used in the restoration shall produce a surface or feature equal to or better than the condition of each before the work began, as approved by GE or GE's Representative.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section MP-02200 – Earthwork
- B. Section MP-02212 – Topsoil, Seeding, and Mulch
- C. Section MP-02222 – Fill Materials
- D. Section MP-02600 – Bituminous Concrete Pavements

1.03 SUBMITTALS

- A. A schedule of restoration operations shall be submitted by the Contractor for review.
- B. Material cut sheets for chain link fencing shall be submitted by the Contractor for review.
- C. Name of proposed fencing installer shall be submitted by the Contractor for review.

1.04 SCHEDULE OF RESTORATION

- A. After an accepted schedule has been agreed upon, it shall be adhered to unless otherwise revised with the approval of GE or GE's Representative.
- B. The replacement of surfaces at any time, as scheduled or as directed, shall not relieve the Contractor of responsibility to repair damages by settlement or other failures.

PART 2 - PRODUCTS

2.01 CHAIN-LINK FENCING

A. Chain-link fencing shall comply with the following specifications:

6' or 8' Fence:

Fabric:	2" Aluminized Mesh, 6 gauge, selvage to be knuckle/knuckle
Framework:	Top and bottom rails: 1-5/8" schedule 40
	Line posts 2-1/2" schedule 40
	Brace Rail 1-5/8" schedule 40
	Corner Posts 2-1/2" schedule 40
	End Posts 3" schedule 40
	Gate Posts 3" schedule 40
	Gate Frame 2" schedule 40

Post Attachment: install fencing using bolted flanges to concrete slabs or install concrete footings where posts will be located in grass area.

8' Fence: in lawn or earth areas install 48" deep x 12" diameter concrete footings at posts.

6' Fence: in lawn or earth areas, drive fence posts to depth of 4' minimum.

PART 3 - EXECUTION

3.01 ASPHALT PAVEMENT

A. Pavement shall be constructed in the areas requiring restoration (i.e., existing pavement damaged as a result of construction activities) and/or as shown on the Technical Drawings.

1. The thickness of the asphalt and subbase coarse shall be at least equal to existing thicknesses or as shown on the Technical Drawings.
2. After compaction, the surface shall conform to the slope and grade of the area being replaced and/or as shown on the Technical Drawings.

3.02 GRASSED AREAS

- A. The furnishing and placing of topsoil, seed and mulch shall be as directed by GE or GE's Representative.
- B. When required to obtain germination, the seeded areas shall be watered in such a manner as to prevent washing out of the seed.
- C. Precautionary measures shall be taken to prevent washout or other damage to seeded areas. If a washout or other damage occurs, the area shall be regraded and/or reseeded at the Contractor's expense until a sod, approved by GE or GE's Representative, is established.
- D. The Contractor shall maintain the newly seeded areas in good condition, including regrading, reseeding, remulching, and watering, as necessary.

3.04 OTHER TYPES OF RESTORATION

- A. Drainage structures, including culverts, manholes, catch basins, sidewalks, pavements and piping, curbs and gutters, that are destroyed or removed as a result of the construction operations shall be replaced in like size and material and shall be replaced at the original location and grade unless otherwise shown on the Technical Drawings. When there is minor damage to a drainage structure and with the consent of GE or GE's Representative, a repair may be undertaken, if satisfactory results can be obtained.
- B. Fences and gates destroyed, damaged, removed or otherwise altered as a result of the construction operations shall be replaced in like size and material and shall be replaced at the original location unless otherwise noted on the Technical Drawings.
- C. Chain link fencing shall be installed by a properly licensed, qualified fencing installer.

3.05 MAINTENANCE

- A. The finished products of restoration shall be maintained in an acceptable condition for and during a period of two years following the date of Substantial Completion or other such date as set forth elsewhere in the Contract Documents.

- END OF SECTION -

MATERIALS AND PERFORMANCE - SECTION 02212

TOPSOIL, SEEDING, AND MULCH

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work under this section consists of furnishing and placing of topsoil, fertilizer, seed, mulch, erosion control matting, and maintenance of seeded areas until final acceptance.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section MP-02200 – Earthwork
- B. Section MP-02207 – Restoration of Surfaces
- C. Section 7.5.5 – Backfilling of Excavations
- D. Section 7.5.10 – Restoration of Disturbed Vegetation

1.03 SUBMITTALS

- A. Analysis of the seed (to demonstrate compliance with the seed mix identified in Sections 2.01D and 2.01E of this specification) and fertilizer (to identify chemical composition), and proposed application rates (to demonstrate compliance with the fertilizer application rate identified in Section 3.01B of this specification).
- B. Should hydroseed be used, the Contractor shall submit all data including material and application rates and methods.
- C. Sample of topsoil to be tested by GE for chemical contaminants as discussed in Section 7.5.5 – Backfilling of Excavations

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Any offsite topsoil shall be unfrozen, friable, natural loam and shall be free of clay lumps, brush needs, litter, stumps, stones, and other extraneous matter. The topsoil shall have an organic content between 5% and 20%, and a pH between 5.5 and 7.5.
- B. Fertilizer shall be a standard quality commercial carrier of available plant food elements (i.e., a complete prepared and packaged material containing a minimum of 5% nitrogen, 10% phosphoric acid, and 10% potash).
 - 1. Each bag of fertilizer shall bear the manufacturer's guaranteed statement of analysis.
- C. Seed mixtures shall be of commercial stock of the current season's crop and shall be delivered in unopened containers bearing the guaranteed analysis of the mix. All seed shall meet the State standards of germination and purity.
- D. Seed mix to be used within the GE Lyman Street parking lot area within Parcel I9-8-1 shall consist of the following mixture of native warm-season grass and wildflower species: 23% creeping red fescue

- (*Festuca rubra*), 15% little bluestem (*Schizachyrium scoparium*), 15% indian grass (*Scorphastrum nutans*), 8% wild blue lupine (*Lupinus perennis*), 6% Canada wild-rye (*Elymus canadensis*), 6% common milkweed (*Asclepias syriaca*), 10% blue verain showy tick-trefoil (*Desmodium canadense*), 5% zig-zag aster/New York aster mix (*Aster prenanthoides/novi-belgi mix*), 5% New England aster (*Aster novae-angliae*), 3% wild senna (*Cassia hebecarpa*), 2.5% golden alexanders (*Zizia aurea*), 1.5% butterfly milkweed (*Asclepias tuberosa*). To ensure soil stability and prevent erosion, a nurse crop of annual rye-grass (*Lolium temulentum*) will be added to the seed mixture. The seed mixture will be seeded at a rate of 15 pounds per acre (*see seed mix attached at the end of this section).
- E. Seed mix to be used in vegetated areas other than Parcel I9-8-1 shall consist of the following mixture: 65% Kentucky Blue Grass, 20% Perennial Rye Grass, and 15% Fescue. The seed mixture will be seeded at a rate of 150 pounds per acre.
 - F. Mulch shall be stalks of oats, wheat, rye, or other approved crops free from noxious weeds and coarse materials.
 - G. Temporary erosion control matting shall be S75 as manufactured by North American Green, or equivalent.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. The topsoil shall be applied in a single loose lift of not less than 3 inches and shall have a final thickness as shown on the Technical Drawings. No compaction is required or allowed. Following placement of topsoil and prior to fertilizer application, all stones greater than 1-inch in diameter, sticks, and other deleterious material shall be removed.
- B. The fertilizer shall be applied to the surface uniformly at the rate of 20 pounds per 1,000 square feet.
 - 1. Following the application of the fertilizer and prior to application of the seed, the topsoil shall be scarified to a depth of at least 2 inches with a disk or other suitable method traveling across the slope if possible.
 - a. After the soil surface has been fine-graded, the seed mixture shall be uniformly applied upon the prepared surface with a mechanical spreader at a rate specified by the seed manufacturer.
 - b. The seed shall be raked lightly into the surface.
 - c. Seeding and mulching shall not be done during windy weather.
 - d. Mulch (where used) shall be hand or machine spread to form a continuous blanket over the seed bed, approximately 2 inches in uniform thickness at loose measurement with a minimum of 90% surface coverage. Excessive amounts or bunching of mulch shall not be permitted.
 - e. Unless otherwise specified, mulch shall be left in place and allowed to decompose.

2. Any mulch that has not disintegrated at time of first mowing shall be removed.
 - a. Seeded areas shall be watered as often as required to obtain germination and to obtain and maintain a satisfactory sod growth. Watering shall be performed in such a manner as to prevent washing out of seed and mulch.
 - b. Hydroseeding may be accepted as an alternative method of applying fertilizer, seed, and mulch. The Contractor must submit all data regarding materials and application rates to GE or GE's Representative for review.
 - c. Temporary erosion control matting shall be installed in accordance with manufacturer's specifications.

3.02 MAINTENANCE

- A. All erosion rills or gullies within the topsoil layer shall be filled with additional approved topsoil, graded smooth, and re-seeded and mulched.
- B. The Contractor shall also be responsible for repairs to all erosion of the seeded areas until all new grass is firmly established and reaches a height of not less than 4 inches. All bare or poorly vegetated areas must be re-seeded and mulched.

*See attached NE wildflower seed mix referenced in Section 2.01(D) above.

- END OF SECTION -



NEW ENGLAND WETLAND PLANTS, INC

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AMHERST, MA 01002

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2005 NEW ENGLAND WILDFLOWER MIX	
SPECIES	PERCENT
Creeping Red Fescue (<i>Festuca rubra</i>)	23
Little Bluestem (<i>Schizachyrium scoparium</i>)	15
Indian Grass (<i>Sorghastrum nutans</i>)	15
Partridge Pea (<i>Chamaecrista fasciculata</i>) Showy Tick-Trefoil (<i>Desmodium canadense</i>)	10
Wild Blue Lupine (<i>Lupinus perennis</i>)	8
Canada Wild Rye (<i>Elymus canadensis</i>)	6
Zig-Zag Aster/New York Aster Mix (<i>Aster prenanthoides/novi-belgi</i> mix)	5
New England Aster (<i>Aster novae-angliae</i>)	5
Wild Senna (<i>Cassia hebecarpa</i>)	3
Common Milkweed (<i>Asclepias syriaca</i>)	6
Golden Alexanders (<i>Zizia aurea</i>)	2.5
Butterfly Milkweed (<i>Asclepias tuberosa</i>)	1.5
TOTAL	100

APPLICATION RATE: 15 LBS/ACRE

2904 SQ. FT./LB

Price: \$45.00/LB (bulk)
FOB plus shipping & handling (plus tax if applicable)

The New England Wildflower Mix provides a selection of native wildflowers and grasses to ensure that a variety of the species will survive in all conditions encountered from dry to moist. It is an appropriate seed mix for roadsides, commercial landscaping, parks, golf courses, industrial sites and areas undergoing ecological restoration. The mix may be applied by hydro seeding on slopes, by mechanical spreader, or on small sites it may be spread by hand. When applying on bare soil, rake the soil to create grooves, apply seed, then lightly rake over. In New England, the best results are obtained with an early Spring seeding. Summer seeding can be successful with a light mulching of weed free straw to conserve moisture. Late Fall and Winter dormant seeding require a slight increase in the seeding rate. Fertilization is not required unless the soils are particularly infertile.

MATERIALS AND PERFORMANCE - SECTION 02219

GEOCOMPOSITE

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Contractor shall provide all labor, materials, tools, and equipment necessary to furnish and install geocomposite where specified in the Technical Drawings.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section MP-02200 – Earthwork
- B. Section MP-02232 – Geotextile Fabric
- C. Section MP-02234 – Flexible Membrane Liner

1.03 APPLICABLE CODES, STANDARDS AND SPECIFICATIONS

- A. American Society of Testing and Materials (ASTM) – test method and associated properties;
 - 1. D1505 Specific Gravity
 - 2. D1238 Melt Flow Index
 - 3. D1603 Carbon Black Content
 - 4. D374 Thickness
 - 5. D4716 Constant Head Transmissivity
 - 6. D3776 Weight
 - 7. D1777 Thickness
 - 8. D4632 Grab Tensile and Grab Elongation
 - 9. D4833 Puncture
 - 10. D4751 Apparent Opening Size (AOS)
 - 11. D4533 Trapezoidal Tear
 - 12. D4491 Water Flow Rate
 - 13. D7005/F904/GRI GC7 Ply Adhesion
 - 14. D5261 Unit Weight
- B. Where reference is made to one of the above codes, standards, specifications, or publications, the revisions in effect at the time of bid shall apply.

1.04 SUBMITTALS

- A. Manufacturer's data for the geocomposite including physical properties and roll size.
- B. The origin (supplier's name and production plant) and identification (brand name and number) of the geotextile and geonet used to fabricate the geocomposite.
- C. Geocomposite material sample.
- D. Manufacturer's quality assurance/quality control program.

- E. Written certification that the Minimum Average Roll Values (MARVs) provided under 2.02 of this section are guaranteed by the Manufacturer.
- F. Contractor's proposed transportation, handling, and storage techniques.
- G. Written certification by the Contractor that the field delivered geocomposite has not been damaged due to improper transportation, handling, or storage. This certification shall be provided prior to the installation of the geocomposite.
- H. Prior to installing the geocomposite, the Installer shall certify in writing that the surface on which the geocomposite will be installed is acceptable. The certification is subject to the review and approval or rejection by GE or GE's Representative.
- I. Prior to installation, the Contractor shall provide the Installer's written verification that the geocomposite has not been damaged due to improper transportation, handling, or storage.
- J. All personnel performing installation shall be qualified by previous experience.
- K. The Contractor shall provide shop drawings depicting installation details, a panel layout diagram, and a description of proposed installation techniques.
- L. The Contractor shall provide quality control certificates for the geocomposite, which identifies the sections of field delivered material they represent, signed by a responsible party employed by the Manufacturer. The quality control certificates shall include lot and roll identification numbers, testing procedures and results of quality control tests. At a minimum, results shall be given in accordance with the Technical Drawings and Specifications for:
 - Unit weight (geotextile component) (ASTM D5261).
 - Thickness (ASTM D1777).
 - Geotextile-geonet ply adhesion (ASTM D7005/F904/GRI GC7).
 - Transmissivity Testing (ASTM D4716).

Quality control tests for the list above shall be performed in accordance with the manufacturer's quality assurance/quality control program.
- M. The Contractor shall submit written certification that the delivered material meets the manufacturer's specifications. The Contractor shall also provide the lot and roll number for the material delivered to the site.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. GSE Lining Technology, Inc.
- B. TENAX.
- C. Approved equal.

2.02 MATERIALS

- A. The geocomposite shall be comprised of a high-density polyethylene (HDPE) drainage net composited with two, 8 oz/yd² non-woven geotextiles. The geotextiles shall be heat bonded to both sides of the drainage net.
1. The drainage net to be used in the composite shall be a profiled mesh made by extruding two sets of high density strands together to form a diamond shaped, three-dimensional net to provide planar fluid flow. The drainage net shall be made of HDPE containing carbon black, anti-oxidants, and heat stabilizers that shall be manufactured from resin provided from one resin supplier.
 2. The geotextile shall be a non-woven, needle punched polymeric material.
- B. Geocomposite material may be acceptable for use provided the selected product meets the above-described requirements and the following conformance testing:

1. Drainage Net

Property	Test Method	Unit of Measure	Minimum Test Value
Specific Gravity	ASTM D1505	g/cm ³	0.94
Melt Flow Index	ASTM D1238 - Condition E	g/10 min.	0.3 maximum
Carbon Black Content	ASTM D1603	%	2.0

2. Geotextile

Property	Test Method	Unit of Measure	Minimum Test Value
Grab Tensile	ASTM D4632	lbs.	203
Grab Elongation	ASTM D4632	%	50
Puncture	ASTM D4833	lbs.	79
Trapezoidal Tear	ASTM D4533	lbs.	79
Burst Strength	ASTM D3786	lbs.	247
Permittivity	ASTM D4491	sec ⁻¹	0.2
Apparent Opening Size	ASTM D4751	mm	0.25

3. Compositing Materials

Property	Test Method	Unit of Measure	Minimum Test Value
Transmissivity	ASTM D4716*	m ² /s	9.4 x 10 ⁻³
Ply Adhesion	ASTM D7005/F904/GRI GC7	lb/in width	0.5

* Conformance test methods to be performed with the following modifications:

Substrate Material:	60-mil HDPE geomembrane
Superstrate Material:	Neoprene or 6 inches of representative soil
Applied Normal Compressive Load:	5,000 lbs/sq.ft.
Seating Time:	100 hours (minimum)
Hydraulic Gradient:	0.1

Conformance testing of alternative materials shall be at the Contractor's expense.

Conformance test results, if required, will be reviewed by GE or GE's Representative. The material shall either be accepted or rejected by GE or GE's Representative based on the results of the conformance testing. Deployment of the geocomposite shall not commence until GE or GE's Representative has determined that the material is acceptable. If the Contractor has reason to believe that failing tests may be the result of the CQA Laboratory incorrectly conducting the tests, the Contractor may request that the sample in question be retested by the CQA Laboratory with a technical representative of the Manufacturer present during the testing. This retesting shall be done at the expense of the Contractor. Alternatively, the Contractor may have the sample retested at two different approved CQA Laboratories at the expense of the Contractor. If both laboratories produce passing results, the material may be accepted at the discretion of GE or GE's Representative. If both laboratories do not produce passing results, then the original CQA Laboratory's test results will be accepted. The use of these procedures for dealing with failed test results is subject to the approval of GE or GE's Representative.

If a test result is not in conformance with a required MARV, all material from the lot represented by the failing test shall be considered out of specification and rejected. Alternatively, at the option of GE or GE's Representative, additional conformance test samples may be taken to "bracket" the portion of the lot not meeting specification (note that this procedure is valid only when all rolls in the lot are consecutively produced and numbered from one manufacturing line). To isolate the out-of-specification material, additional samples must be taken from rolls that have roll numbers immediately adjacent to the roll that was sampled and failed. If both additional tests pass, the roll that represents the initial failed test and the roll manufactured immediately after that roll (next larger roll number) will be rejected. If one or both of the additional tests fail, then the entire lot will be rejected or the procedure repeated with two additional tests that bracket a greater number of rolls within the lot. The additional conformance test samples will be collected by GE or GE's Representative and submitted to the same CQA laboratory that was used for the original conformance testing. The costs associated with the additional conformance testing will be borne by the Contractor.

2.03 DELIVERY, STORAGE AND HANDLING

- A. The geocomposite shall be packaged and shipped by appropriate means so as to prevent damage. Geocomposite rolls will be wrapped in relatively opaque and water tight plastic to prevent damage during shipping and storage. Geocomposite rolls that have been delivered to the job site will be unloaded and stored in their original, unopened wrappers in a secure, dry area, and protected from weathering. Materials shall be delivered only after the required submittals have been received and approved by GE or GE's Representative.

- B. The geocomposite shall be furnished in rolls, marked or tagged with the following information:
 - 1. Manufacturer's Name
 - 2. Product Identification
 - 3. Lot/Batch Number
 - 4. Roll Number
 - 5. Roll Dimensions
- C. The geocomposite shall be stored in an area approved by GE or GE's Representative that prevents damage to the product or packaging.
- D. The geocomposite shall be kept clean and free from dirt, dust, mud, and any other debris.
- E. Any geocomposite found to be damaged shall be replaced with new material at the Contractor's expense.

2.04 QUALITY ASSURANCE

- A. Field delivered material shall meet the specification values according to the manufacturer's specification sheet and meet or exceed the requirements in this specification, as required for alternative materials.
- B. The manufacturer shall have developed and shall adhere to its own quality assurance program in the manufacture of the geocomposite.

PART 3 - EXECUTION

3.01 PREPARATION

- A. The areas designated for placement of geocomposite shall be free from any deleterious material.
- B. If the geocomposite is not clean before installation, it shall be washed by the Contractor until accepted by GE or GE's Representative.
- C. Prior to installation of any geocomposite, GE or GE's Representative and the Contractor must both concur that the underlying FML is acceptable. This will necessitate reviewing of all QA/QC testing of the FML by GE or GE's Representative and the Contractor. The Contractor shall submit written verification that both GE or GE's Representative and the Contractor agree that the underlying FML is acceptable (refer to 1.04.H of this section).

3.02 INSTALLATION

- A. Geocomposite shall be installed at locations shown on the Technical Drawings.
- B. Adjacent rolls shall be installed so that the geonet component will have a minimum overlap of 4 inches.
- C. The geonet shall be tied with plastic fasteners every 5 feet along the slope, every 6 inches on butt seams, and every 6 inches in the anchor trench.

- D. The geotextiles shall be continuously sewn using a polymeric thread with chemical and ultraviolet resistance properties equal to or exceeding those of the geotextile.
- E. The geocomposite shall be unrolled downslope, keeping the net in slight tension to minimize wrinkles and folds.
- F. If a tri-planar material is used, it must be installed in the appropriate flow direction.
- G. Adequate loading shall be placed to prevent uplift by wind.
- H. Holes or tears in the geocomposite shall be repaired in accordance with the manufacturer's recommendations.
- I. Any portion of the geocomposite exhibiting a flaw shall be repaired. Prior to acceptance of the geocomposite, the Installer shall locate and repair all damaged areas as directed by GE's Representative.

- END OF SECTION -

MATERIALS AND PERFORMANCE - SECTION 02222

FILL MATERIALS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. Work under this section shall include, but not necessarily be limited to, supplying all labor and materials, excavating, transporting, dumping, spreading, and compacting fill material in the locations and to the depth shown on the Technical Drawings and/or as directed by GE or GE's Representative.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section MP-02200 – Earthwork

1.03 APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS

- A. American Society for Testing Materials (ASTM).
- B. American Association of State Highway and Transportation Officials (AASHTO).
- C. Massachusetts Highway Department Standard Specifications for Highways and Bridges (MHD).

1.04 SUBMITTALS

- A. Sieve analysis of all granular materials.
- B. Sample of soil to be tested for chemical contaminants as discussed in Section 7.5.5 – Backfilling of Excavations.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Fill materials shall be of the types listed below:

1. Soil Fill:

- a. Soil fill material shall be free from excessive moisture, frost, stumps, trees, roots, sod, muck, marl, vegetable matter, or other unsuitable materials, and demonstrated to be clean based on chemical analysis. Soil fill shall consist of clean common earth fill, free from organic material, coatings, sharp angular stones, and other deleterious materials, and shall have a maximum particle size of 3 inches. Soil fill shall have the following gradation by weight:

<u>Sieve</u>	<u>Percent Passing</u>
3 inch	100
No. 200	10-30

2. Subbase/Gravel:

- a. Subbase/gravel shall have a percentage of wear, by the Los Angeles test, of not more than 45. Fine aggregate shall consist of natural or crushed stone. The composite material shall be free from clay, loam or other plastic material, and shall conform to the following grading requirements:

<u>Sieve Designation</u>	<u>Percent Passing</u>
2 inch	100
1 ½ inch	70-100
¾ inch	50-85
No. 4	30-55
No. 50	8-24
No. 200	3-10

- b. Sampling and testing shall be in accordance with the following standard AASHTO methods:

Sieve Analysis – T27
Passing No. 200 (75µm) – T11

3. Filter Stone:

- a. Material placed around collection piping shall be washed, rounded run-of-bank gravel, with a d_{max} of 1 ½ inches and a d_{min} of ¾ inches.
- b. Filter stone shall be wrapped with non-woven geotextile as shown on the Technical Drawings.
- B. Backfill material shall be inspected prior to placement and all roots, vegetation, organic matter, or other foreign debris shall be removed.
- C. With the exception of riprap, stones larger than 6 inches in any dimension shall be removed or broken. Additional size requirements for backfill placed within 6 inches of the bottoms of engineered barriers are as specified above.
- D. Stones shall not be allowed to form clusters with voids.

PART 3 - EXECUTION

3.01 FILL PLACEMENT

- A. In general, fill material shall be placed and compacted in horizontal layers not exceeding those thicknesses indicated in Section MP-02200 - Earthwork. Subgrade that will receive fill material shall be first approved by GE or GE's Representative. Fill material shall not be placed in areas that will not support the weight of construction equipment.
- B. Each layer of fill material shall be thoroughly tamped or rolled to the required degree of compaction by mechanical tampers or vibrators as specified in 3.02 of this section. Successive layers shall not be placed until the layer under construction has been thoroughly compacted.

- C. Where required, the Contractor shall, at its own expense, moisture-condition the fill to meet the compaction requirements. If the material is too wet for satisfactory compaction due to rain or other causes, it shall be allowed to dry or be removed as required before compaction.
- D. No compaction is required for riprap.

3.02 FIELD TESTING AND QUALITY CONTROL

- A. In-place nuclear density testing (ASTM D2922 and D3017) shall be performed by an independent testing laboratory, at the Contractor's expense, at the frequency specified in Section MP-02200 – Earthwork to meet the minimum compaction requirements presented in Table 1 of that section.
- B. If a defect (e.g., insufficient layer thickness, materials that exceed particle size requirements, etc.) is discovered in a finished fill material layer, GE or GE's Representative will determine the extent and nature of the defect by additional testing, observation, a review of records, or other means that GE or GE's Representative deems appropriate. The Contractor shall be responsible for correcting all deficiencies to the satisfaction of GE or GE's Representative.

3.03 CRITERIA AND TOLERANCES

- A. Fill material shall be constructed to such heights as to make allowance for post-construction settlement. Any settlement that occurs before final acceptance of the Contract shall be corrected to make the backfill conform to the required lines and grades.

- END OF SECTION -

MATERIALS AND PERFORMANCE - SECTION 02232

GEOTEXTILE FABRIC

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Contractor shall supply all labor, materials, tools, and equipment required to furnish and install geotextile fabric as shown on the Technical Drawings or as indicated by GE or GE's Representative.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section MP-02219 – Geocomposite
- B. Section MP-02234 – Flexible Membrane Liner

1.03 APPLICABLE CODES, STANDARDS AND SPECIFICATIONS

- A. American Society for Testing and Materials (ASTM)
 - 1. D5261 Unit Weight
 - 2. D4632 Grab Tensile and Grab Elongation
 - 3. D3786 Mullen Burst
 - 4. D4833 Puncture
 - 5. D4533 Trapezoidal Tear
 - 6. D4355 Ultraviolet Resistance
 - 7. D4751 Apparent Opening Size (AOS)
 - 8. D4491 Permeability
- B. Where reference is made to one of the above codes, standards, specifications, or publications, the revisions in effect at the time of bid shall apply.

1.04 SUBMITTALS

- A. Manufacturer's data for geotextile including, at a minimum, physical properties, packaging, and installation techniques.
- B. The origin (resin supplier's name and resin production plant) and identification (brand name and number) of the resin used to manufacture the geotextile.
- C. Geotextile material sample.
- D. Manufacturer's quality assurance/quality control program.
- E. Quality control test results conducted by the Manufacturer during the manufacturing of the geotextile fabric delivered to the project site. The results shall identify the sections/panels of the fabric they represent. The Contractor shall also provide the lot and roll number for the fabric delivered to the site.
- F. Written certification that the MARVs provided under 2.02 of this section are guaranteed by the Manufacturer.

- G. Contractor's proposed transportation, handling, storage, and installation techniques.
- H. Shop drawings depicting installation details and a description of proposed installation techniques.
- I. Manufacturer's standard warranty provided for the geotextiles.
- J. Written certification by the Contractor that the field delivered material meets the manufacturer's specifications.
- K. Written certification by the Contractor that the field delivered geotextile has not been damaged due to improper transportation, handling, or storage. This certification shall be provided prior to installation of the geotextile.
- L. Prior to installing the geotextile, the Installer shall certify in writing that the surface on which the geotextile will be installed is acceptable. The certification is subject to the review and approval or rejection by GE or GE's Representative.
- M. The Contractor shall provide quality control tests conducted by the Manufacturer. The quality control testing results shall include lot and roll identification numbers representative of the field-delivered material. At a minimum, results shall be given in accordance with the Technical Drawings and Specifications for:
 - a. Unit weight (ASTM D5261).
 - b. Grab strength (ASTM D4632).
 - c. Trapezoidal tear strength (ASTM D4533).
 - d. Burst strength (ASTM D3786).
 - e. Puncture (ASTM D4833).
 - f. UV resistance (ASTM D4355).
 - g. Apparent Opening Size (ASTM D4751).
 - h. Permeability (ASTM D4491) not required for cushioning geotextile.

PART 2 - PRODUCT

2.01 ACCEPTABLE MANUFACTURERS

- A. Synthetics Industries.
- B. Amoco.
- C. Approved equal.

2.02 MATERIALS

- A. For these specifications and the Technical Drawings, the terms "geotextile" and "geotextile fabric" shall be considered synonymous.
- B. The non-woven geotextile shall be of needle-punched construction and consist of long-chain polymeric fibers or filaments composed of polypropylene, shall be free of any chemical treatment that reduces permeability, and shall be inert to chemicals commonly found in soil.
- C. The non-woven geotextile indicated on the Technical Drawings for cushioning beneath the FML shall have the MARV for each physical property listed below:

Property	Test Method	Unit of Measure	Minimum Test Value
Grab Tensile	ASTM D4632	lbs.	203
Grab Elongation	ASTM D4632	%	50
Trapezoidal Tear	ASTM D4533	lbs.	79
Puncture	ASTM D4632	lbs.	79
Burst Strength	ASTM D3786	lbs.	247
Unit Weight	ASTM D5261	oz./yd. ²	16

- D. The non-woven geotextile indicated on the Technical Drawings for use with filter stone around subsurface collection pipes shall have the MARV for each physical property listed below:

Property	Test Method	Unit of Measure	Minimum Test Value
Grab Tensile	ASTM D4632	lbs.	158
Grab Elongation	ASTM D4632	%	50
Puncture	ASTM D4833	lbs	56
Trapezoidal Tear	ASTM D4533	lbs.	56
Burst Strength	ASTM D3786	lbs.	189
Permittivity	ASTM D4491	sec ⁻¹	0.2
Apparent Opening Size	ASTM D4751	mm	0.25

2.03 DELIVERY, STORAGE AND HANDLING

- A. The geotextile shall be furnished in a protective wrapping that shall be labeled with the following information: Manufacturer's name, product identification, lot number, roll number, and dimensions.
- B. The geotextile shall be protected from ultraviolet light, precipitation, mud, soil, excessive dust, puncture, cutting, and/or other damaging conditions prior to and during delivery and on-site storage. The geotextile shall be shipped and stored in relatively opaque and watertight wrappings. The geotextile shall be stored on-site at a location approved by GE or GE's Representative.

2.04 QUALITY ASSURANCE

- A. The field-delivered fabric shall meet the specification values according to the Manufacturer's specification sheet.
- B. The Manufacturer shall have developed and shall adhere to its own quality assurance program in the manufacture of the geotextile.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Prior to installing the geotextile, placement surfaces shall be leveled and uniformly compacted, as necessary, to provide a stable interface for the geotextile that is as smooth as possible.

3.02 GEOTEXTILE INSTALLATION

- A. The following procedures and requirements will be followed during the geotextile installation.

1. Placement:

- a. Placement of the geotextile shall not be conducted during adverse weather conditions. The geotextile shall be kept dry during storage and up to the time of deployment. During windy conditions, all geotextiles shall be secured with sandbags or an equivalent approved anchoring system. Removal of the sandbags or equal shall only occur upon placement of an overlying soil layer.
- b. Proper cutting tools shall be used to cut and size the geotextile materials. Care shall be exercised while cutting geotextiles.
- c. During the placement of geotextiles, all dirt, dust, sand, and mud shall be kept off the geotextile to prevent clogging. If excessive containment materials are present on the geotextile, it shall be cleaned or replaced as directed by GE or GE's Representative.
- d. Geotextile shall be covered within the time period recommended by the manufacturer, and in no case later than two weeks after its placement.
- e. In all cases, seams on slopes shall be parallel to the line of slope. No horizontal seams shall be allowed on slopes.

2. Seaming and Repairing

- a. Geotextiles shall be continuously sewn using a polymeric thread with chemical and ultraviolet resistance properties equal to or exceeding those of the geotextile.
- b. Repair of tears or holes in the geotextile shall require the following procedures:
 - 1) On slopes: A patch made from the same geotextile shall be double seamed into place; with each seam 1/4-inch to 3/4-inch apart and no closer than 1 inch from any edge. Should any tear exceed 10% of the width of the roll, that roll shall be removed from the slope and replaced.
 - 2) Non-slopes: A patch made from the same geotextile shall be spot-seamed in place with a minimum 24-inch overlap in all directions.

- END OF SECTION -

MATERIALS AND PERFORMANCE - SECTION 02234

FLEXIBLE MEMBRANE LINER

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. Under this section, the Contractor shall furnish and install 60-mil thick, textured high-density polyethylene (HDPE) Flexible Membrane Liner (FML) material as shown on the Technical Drawings, and as specified herein and/or directed.
2. The Contractor shall be responsible for all Quality Assurance/Quality Control (QA/QC) testing specified herein and as indicated on the Technical Drawings. All QA/QC testing, with the exception of non-destructive tests, shall be conducted by an independent laboratory at the Contractor's expense.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section MP-02219 – Geocomposite
- B. Section MP-02232 – Geotextile Fabric

1.03 APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS

A. American Society for Testing and Materials (ASTM)

1. D638 Tensile Properties of Plastics
2. D792 Specific Gravity and Density of Plastics by Displacement
3. D1004 Initial Tear Resistance of Plastic Film and Sheeting
4. D1505 Density of Plastics by the Density Gradient Technique
5. D1603 Carbon Black in Olefin Plastics
6. D5397 Environmental Stress-Cracking of Ethylene Plastics
7. D5994 Core Thickness of Textured Geomembrane
8. D5596 Microscopical Examination of Pigment Dispersion in Plastic Compounds
9. D4833 Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
10. D4218 Carbon Black Content
11. D4437 Integrity of Field Seams
12. D6693 Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes

B. Geosynthetic Research Institute (GRI)

1. GRI Test Method GM 13: Test Properties, Testing Frequencies and Recommended Warranty for High-Density Polyethylene (HDPE) Textured Geomembranes

- C. Where reference is made to one of the above codes, standards, specifications, or publications the revisions in effect at the time of bid shall apply.

1.04 SUBMITTALS

A. FML Manufacturer

1. The Contractor shall submit to GE or GE's Representative for approval the following information regarding the FML Manufacturer:
 - a. Corporate background and information.
 - b. Manufacturing capabilities including:
 - 1) Quality control procedures for manufacturing; and
 - 2) List of material properties including certified test results, to which FML samples are attached.
 - c. Origin (resin supplier's name, resin production plant) and identification (brand name, number) of the resin.
 - d. Copies of dated quality control certificates issued by the resin supplier.
 - e. Written certification that the MARVs given in the specification are guaranteed by the Manufacturer.

B. Installer

1. The Contractor shall submit to GE or GE's Representative for approval the following written information, relative to the Installer:
 - a. Copy of Installer's letter of approval or license by the Manufacturer.

C. The Installer of the FML materials shall prepare and the Contractor shall submit to GE or GE's Representative, record drawings illustrating the following information:

1. Dimensions of all FML field panels.
2. Panel locations referenced to the Technical Drawings which depict the identification number assigned to each FML panel.
3. All field seams and panels with the appropriate number or code.
4. Location of all patches, repairs, and destructive testing samples.

- D. The Contractor shall submit the following items for approval at least one week prior to installation:
1. Shop drawings that shall include:
 - a. Layout Plan;
 - b. Quality control program manuals covering all phases of manufacturing and installation; and
 - c. Complete and detailed written instructions for the storage, handling, installation, seaming, inspection plan fail criteria for liner inspections, and QA/QC testing procedures of the liner in compliance with these specifications and the condition of its warranty.
- E. The Contractor shall obtain and submit to GE or GE's Representative from the Manufacturer a standard warranty provided for the FML.
- F. The Contractor shall provide quality control tests conducted by the Manufacturer. The quality control testing results shall include lot and roll identification numbers, representative of the field delivered material. At a minimum, results shall be given in accordance with the Technical Drawings and Specifications for:
1. Density (ASTM D1505);
 2. Carbon black content (ASTM D1603);
 3. Carbon black dispersion (ASTM D5596);
 4. Thickness (ASTM D5994);
 5. Tensile properties (ASTM D638); and
 6. Tear strength (ASTM D1004).
- G. The FML Installer shall certify in writing that the final surface on which the FML is to be installed is acceptable to both GE and the Contractor prior to installation of the FML.
- H. Quality Control/Quality Assurance
1. Written certification by the Contractor that the field-delivered FML has not been damaged due to improper transportation, handling, or storage. This certification shall be provided prior to the installation of the FML.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Solmax Geosynthetics.
- B. GSE Lining Technology, Inc.
- C. Approved equal.

2.02 MATERIALS

A. HDPE Lining Material Specifications:

1. HDPE FML material shall meet the following minimum specification values listed below and as listed in GRI GM13.

Property	Test Method	Specification Limit
		60 mil Textured
Density (min.)	ASTM D1505/D792	0.940
Carbon Black Content	ASTM D1603 (3) /D4218	2.0 – 3.0%
Carbon Black Dispersion	ASTM D5596	8 of 10 views in categories 1 or 2 All 10 views in categories 1, 2 or 3
Thickness (nominal)	ASTM D5994	60 mil
Thickness (min. avg.)		57 mil
lowest individual 8 of 10 values		54 mil
lowest individual of 10 values		51 mil
Tensile Strength at Break (min.)	ASTM D6693 Type IV	90 lb/in
Tensile Strength at Yield (min.)		126 lb/in
Elongation at Break (min.)		100%
Elongation at Yield (min.)		12%
Tear Resistance (min.)	ASTM D1004	42 lbs
Puncture Resistance (min.)	ASTM D4833	90 lbs
Stress Crack Resistance	ASTM D5397	200 hrs

B. Welding Material

1. The resin used in the welding material must be identical to the liner material.
2. All welding materials shall be of a type recommended and supplied by the manufacturer and shall be delivered in the original sealed containers, each with an indelible label bearing the brand name, Manufacturer's mark number, and complete directions as to proper storage.

C. Labeling FML Rolls

1. Labels on each roll or factory panel shall identify the following:
 - a. Thickness of the material.
 - b. Length and width of the roll or factory panel.
 - c. Manufacturer.
 - d. Directions to unroll the material.
 - e. Product identification.
 - f. Lot number.
 - g. Roll or field panel number.

2.03 DELIVERY, HANDLING, AND STORAGE

- A. The Contractor shall be liable for all damages to the materials incurred prior to and during transportation to the site.
- B. Handling, storage, and care of the FML prior to and following installation at the site is the responsibility of the Contractor. The Contractor shall be liable for all damages to the materials incurred prior to final acceptance of the lining system by GE or GE's Representative.
- C. The Contractor shall notify GE or GE's Representative of the anticipated delivery time.

PART 3 - EXECUTION

3.01 FML INSTALLATION

A. Related Earthwork

- 1. The Contractor shall ensure that all related earthwork requirements under this section are complied with:
 - a. The FML installations shall be performed on geotextile-covered surface free from stones or protruding objects.
 - b. No FML shall be placed onto an area that has become softened by precipitation. Appropriate methods of moisture control are the responsibility of the Contractor.
 - c. No FML shall be placed on frozen soil material. Such material shall be removed and replaced with new soil fill as specified in the Section MP-02222 - Fill Materials.
 - d. All surfaces on which the FML is to be installed shall be acceptable to GE or GE's Representative prior to FML installation.
 - e. Free edges of FML shall be secured so as to prevent uplift by wind or the intrusion of water under the liner. Edge protection shall include sandbags, polyethylene sheeting, or other methods as deemed necessary by the Contractor and approved by GE or GE's Representative.
 - f. The FML shall be anchored within an anchor trench constructed to the dimensions shown in the Technical Drawings. Care shall be taken while backfilling the trenches to prevent damage to the FML.

B. FML Deployment

- 1. FML shall be deployed according to the following procedures:
 - a. Placement of the FML panels shall be according to the approved location and position plan provided by the Installer. Placement shall follow all instructions on the boxes or wrapping containing the FML materials that describe the proper methods of unrolling panels.
 - b. FML deployment shall not be undertaken if weather conditions will preclude material seaming following deployment.

c. The method of placement must ensure that:

- 1) Deployed FML must be visually inspected for uniformity, tears, punctures, blisters, or other damage or imperfections. Any such imperfections shall be immediately repaired and reinspected.
- 2) No equipment used shall damage the FML by handling, trafficking, leakage of hydrocarbons, or other means.
- 3) No personnel working on the FML shall smoke, wear damaging shoes, or engage in other activities that could damage the FML.
- 4) The prepared surface underlying the FML must not be allowed to deteriorate after acceptance, and must remain acceptable up to the time of FML placement and until completion of the project.
- 5) Adequate temporary loading and/or anchoring (e.g., sand bags), not likely to damage the FML, shall be placed to prevent uplift by wind (in case of high winds, continuous loading is recommended along edges of panels to minimize risk of wind flow under the panels).
- 6) Direct contact with the FML shall be minimized (i.e., the FML in excessively high-traffic areas shall be protected by geotextiles, extra FML, or other suitable materials).
- 7) The method used to unroll or adjust the panels does not cause excessive scratches or crimps in the FML and does not damage the supporting soil or underlying geotextile (where applicable).
- 8) The method used to place the panels minimizes wrinkles (especially differential wrinkles between adjacent panels).

d. Any damage to the FML panels or portions of the panels as a result of placement must be replaced or repaired at no cost to GE or GE's Representative. The decision to replace or repair any panel or portions of panels shall be made by GE or GE's Representative.

e. The Installer shall assign an "identification number" to each FML panel placed. The number system used shall be simple, logical, and shall identify the relative location in the field.

C. All personnel performing seaming operations shall be qualified by experience or by successfully passing seaming tests.

D. Seaming

1. The seaming procedures below shall be implemented, where applicable, during installation of the FML. The seaming procedures are as follows:

- a. Generally, all seams whether field or factory, shall be oriented parallel to the line of slope, not across slope. At liner penetrations and corners, the number of seams shall be minimized.
- b. The area of the FML to be seamed shall be cleaned and prepared according to the procedures specified by the material manufacturer. Any abrading of the FML shall not extend more than

one-half inch on either side of the weld. Care shall be taken to eliminate or minimize the number of wrinkles and "fishmouths" resulting from seam orientation.

- c. Field seaming is prohibited when either the air or sheet temperature is below 32°F, when the sheet temperature exceeds 122°F, or when the air temperature is above 104°F. At air or sheet temperatures between 32°F and 40°F, seaming shall be conducted directly behind a preheating device. In addition, seaming shall not be conducted when FML material is wet from precipitation, dew, fog, etc., or when winds are in excess of 20 miles per hour.
- d. Seaming shall not be performed on frozen or excessively wet underlying soil surfaces.
- e. Seams shall have an overlap beyond the weld large enough to perform destructive peel tests, but shall not exceed 5 inches.
- f. The Contractor shall perform trial seams on excess FML material. A 1-foot by 3-foot seamed liner sample shall be fabricated with the seam running down the 3-foot length in the center of the sample. Such trial seaming shall be conducted prior to the start of each seaming succession for each seaming crew, every 4 hours, after any significant change in weather conditions or FML temperature, or after any change in seaming equipment. From each trial seam, four field test specimens shall be taken. The test specimens shall be 1-inch by 12-inch strips cut perpendicular to the trial seam. Two of these specimens shall be shear tested and two shall be peel tested using a field tensiometer, and recorded as pass (failure of liner material) or fail (failure of seam). Upon initial failure, a second trial seam shall be made; if both trial seams fail, then the seaming device and its operator shall not perform any seaming operations until the deficiencies are corrected and two successive passing trial seams are produced. Completed trial seam samples cannot be used as portions of a second sample and must be discarded.
- g. Where fishmouths occur, the material shall be cut, overlapped, and an overlap weld shall be applied. Where necessary, patching using the same liner material shall be welded to the FML sheet.
- h. Acceptable seaming methods for FML are:
 - 1) Extrusion welding using extrudate with identical physical, chemical, and environmental properties; and
 - 2) Hot wedge welding using a proven fusion welder and master seamer.
- i. Seaming device shall not have any sharp edges that might damage the FML. Where self-propelled seaming devices are used, it shall be necessary to prevent "bulldozing" of the device into the underlying soil.

E. Seam Testing

1. The Contractor shall perform nondestructive seam testing on 100 percent of field seams. The following test method and procedures may be used:
 - a. Air pressure testing may be used if double-track hot-wedge welding has been used to seam the HDPE FML. Using approved pressure testing equipment, the following procedures will be followed:
 - 1) Seal both ends of the air channel separating the double-track hot-wedge welds.
 - 2) Insert pressure needle into air channel and pressurize the air channel to 27 psi.
 - 3) Monitor pressure gauge for 3 minutes and determine whether pressure is maintained without a loss of more than 2 psi.
 - 4) If the pressure test fails, then localize the leak and mark the area for repair.
 - a) Air pressure testing will be conducted under the direct observation of GE or GE's Representative.
 - b) Vacuum testing will be used on all seams not tested using air pressure testing. Using an approved vacuum box, the following procedures will be followed:
 - i. Apply a soapy water mixture over the seam.
 - ii. Place vacuum box over soapy seam and form a tight seal.
 - iii. Create a vacuum by reducing the vacuum box pressure to 5 psi for 10 seconds.
 - iv. Observe through the vacuum box window any bubbles.
 - v. Where bubbles are observed, mark seam for repair.
 - vi. Move vacuum box further down seam overlapping tested seam by 3 inches.
 - vii. Where hot-wedge seaming has been performed, the overlap must be cut back to the weld.
 - c) All vacuum testing will be conducted under the direct observation of GE or GE's Representative.
2. In addition to nondestructive seam testing, the Contractor will perform destructive testing. The destructive testing procedures are as follows:
 - a. Test samples will be prepared by the Installer every 500 feet of seam length, a minimum of one test for each seaming machine per day, or more frequently at the discretion of GE or GE's Representative. Sample location and size will be selected by GE or GE's Representative. The sample size (12 x 56 inches) will be large enough to produce three sets of test specimens for the following tests:
 - 1) Seam Shear Strength, ASTM D4437.
 - 2) Peel Adhesion, ASTM D4437.

- b. Ten specimens will compose a set. Five of these will be tested for peel and the other five for shear strength. Each specimen will be 1-inch wide and 12-inches long with the field seam at the center of the specimen. The 56-inch sample length will first be cut at the ends to produce two field peel test specimens. The remaining 54 inches will be divided up into thirds and one-third submitted to the Contractor, one-third to the independent testing laboratory, and one-third to GE or GE's Representative for storage and future reference.
- c. Test specimens will be considered passing if the minimum values below are met or exceeded for four of the five test specimens tested by the independent laboratory. All acceptable seams will lie between two locations where samples have passed.
- d. The cost of destructive testing will be borne by the Contractor.
- e. Seams will meet the following minimum criteria:

Field Seam Properties	Test Method	Specification Limit
Shear Strength at Yield (lb/in width)	ASTM D4437	120 ppi
Peel Adhesion – Fusion	ASTM D4437	91 ppi and Film tear bond
Peel Adhesion - Extrusion	ASTM D4437	78 ppi and Film tear bond

- 3. If a sample fails destructive testing, the Contractor shall ensure that: the seam is reconstructed in each direction between the location of the sample that failed and the location of the next acceptable sample; or the welding path is retraced to an intermediate location at least 10 feet in each direction from the location of the sample that failed the test, and a second sample is taken for an additional field test. If this second test sample passes, the seam must be then reconstructed between the location of the second test and the original sampled location. If the second sample fails, the process must be repeated.
 - a. All costs for work performed to achieve passing tests along with costs for retesting will be borne by the Contractor.
- 4. If double-track hot-wedge welding is used, GE or GE's Representative and the Installer must agree on the track weld that will be used in the destructive testing. The weld chosen inside or outside must be consistently tested, and must pass according to the criteria above.
- 5. All holes created by cutting out destructive samples will be patched by the Contractor immediately with an oval patch of the same material welded to the membrane using extrusion welding. The patch seams will be tested using a vacuum box and using the procedures described above. Work will not proceed with materials covering the FML until passing results of destructive testing have been achieved.
- 6. At the ends of each field seam, two field test specimens will be taken and field tested with a field tensiometer. Both specimens must pass prior to placing the membrane in the anchor trench or continuing with additional seams. Failure of these specimens will require correcting the seaming device and repair of the preceding seam according to the failure testing and procedures described above.

F. Liner Repair

1. All imperfections, flaws, construction damage, and destructive and nondestructive seam failures shall be repaired by the Installer of the FML. The appropriate methods of repair are listed below:
 - a. Patching, used to repair holes, tears, undispersed raw materials, and contamination by foreign matter.
 - b. Grinding and rewelding, used to repair small sections of extruded seams.
 - c. Spot welding or seaming, used to repair pinholes or other minor, localized flaws.
 - d. Capping, used to repair large lengths of failed seams.
 - e. Topping, used to repair areas of inadequate seams which have an exposed edge.
 - f. Removing bad seams and replacing with a strip of new material welded into place.

G. Construction Material Placement and Penetrations

1. Wrinkles that develop from normal placement procedures must be controlled such that the underlying FML does not fold over. Small wrinkles, defined as having their height less than or equal to one-half their base width, may be trapped and pushed down by the overlying soil. Any wrinkle that becomes too large and uncontrollable or that folds the FML over must be brought to the attention of GE or GE's Representative. If necessary, the FML shall be uncovered, cut, laid flat, seamed by extrusion welding, and non-destructively tested.

- END OF SECTION -

MATERIALS AND PERFORMANCE - SECTION 02600

BITUMINOUS CONCRETE PAVEMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Contractor shall be responsible for providing all labor, equipment, and materials required for replacement of bituminous concrete paving over removed driveways or other paved areas as shown on the drawings and as specified herein.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section MP-02222 – Fill Materials

1.03 APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS

- A. American Society of State Highway and Transportation Officials (AASHTO).
- B. Massachusetts Highway Department Standard Specification for Highways and Bridges (Mass Highway Specifications).

1.04 TIME OF CONSTRUCTION

- A. The Contractor shall:
 - 1. Apply prime and tack coats when ambient temperature is above 50°F, and when temperature has not been below 35°F for 12 hours immediately prior to application. The Contractor may not install paving when the base is wet or contains excess moisture.
 - 2. Construct bituminous concrete wearing surface when surface temperature is above 42°F and when the binder is dry.
 - 3. Base course may be placed when air temperature is above 32°F and rising.
 - 4. Establish and maintain required lines and elevations.

PART 2 - PRODUCTS

2.01 SUBBASE COURSE

- A. Subbase course material must be capable of achieving the gradation and compaction requirements as presented in Section MP 02222.

2.02 BASE COURSE AGGREGATE

- A. The crushed aggregate for the bituminous concrete base course shall conform to the requirements of the Mass Highway Specifications.

2.03 BITUMINOUS BINDER

- A. The binder shall be asphalt cement conforming to the requirements of AASHTO 20.

2.04 WEARING SURFACE

- A. The wearing surface shall be Type 1-2. The material shall conform to quality requirements as stated in the Mass Highway Specifications.

PART 3 - EXECUTION

3.01 SURFACE PREPARATION

- A. Remove loose matter from the compacted subbase surface immediately before applying prime coat.
- B. Proof-roll prepared subbase to check for unstable areas and areas requiring additional compaction.
- C. Notify appropriate personnel of unsatisfactory subbase conditions. Paving work may not proceed until deficient subbase areas have been corrected and are ready to receive paving.
- D. Apply tack coat to contact surfaces of previously constructed asphalt or Portland cement concrete and surfaces abutting or projecting into asphalt concrete pavement. The Contractor shall distribute tack coat at rate of 0.05 to 0.15 gallons per square yard of surface.
- E. Allow drying of all surfaces until they are of the proper condition to receive paving.

3.02 PAVING

A. General

- 1. Place concrete mixture on prepared surface, spread, and strike-off. Spread mixture at minimum temperature of 225°F (107°C). Place inaccessible and small areas by hand. Place each course to required grade, cross-section, and compacted thickness.

B. Pavement Placing

- 1. Place in strips not less than 10 inches wide, unless otherwise acceptable to GE or GE's Representative. After strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Complete base course for a section before placing surface course.

C. Joints

- 1. Make joints between old and new pavements or between successive days' work, to ensure a continuous bond between adjoining work. Construct joints to have same texture and smoothness as other sections of bituminous concrete. Clean concrete surfaces and apply tack coat.

3.03 ROLLING

A. General

1. Begin rolling when mixture will bear roller weight without excessive displacement.
2. Compact mixture with hot tampers or vibrating plate compactors in areas inaccessible to rollers.

B. Breakdown Rolling - Accomplish breakdown rolling immediately following rolling of joints and outside edge. Check surface after breakdown rolling and repair displaced areas by loosening and filling, if required, with hot material.

C. Second Rolling - Follow breakdown rolling as soon as possible while mixture is hot. Continue rolling until mixture has been thoroughly compacted.

D. Finish Rolling - Perform finish rolling while mixture is still warm enough for removal of roller marks. Continue rolling until marks are eliminated and course has attained maximum density.

E. Patching - Remove and replace paving areas mixed with foreign materials and defective areas. Cut out such areas and fill with fresh, hot bituminous concrete. Compact by rolling mixture to maximum surface density and smoothness.

F. Protection - After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

G. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

- END OF SECTION -

Attachment C

Flood Storage Capacity Calculations

ATTACHMENT C

FINAL RD/RA WORK PLAN FOR LYMAN STREET AREA

GENERAL ELECTRIC COMPANY PITTSFIELD, MASSACHUSETTS

CHANGES IN FLOOD STORAGE CAPACITY

GE utilized Terra Model™ computer software in order to further evaluate the impacts to flood storage capacity caused by the performance of the response actions proposed in the Final RD/RA Work Plan. This software models existing and post-remediation topography to determine the net change in flood storage capacity.

Based on the attached calculations performed by Terra Model, an estimated 11,200 cubic yards (6.94 acre feet) of flood storage will be lost due to the planned installation of the engineered barrier and the natural resource restoration and enhancement activities at the Lyman Street Area. In addition to the thickness of the engineered barrier (i.e., approximately 12 inches), certain other aspects of the barrier installation result in the placement of additional materials and a corresponding loss in the existing flood storage. These items include additional grading material to create a properly-sloped barrier subgrade and final restoration surface to facilitate drainage. In addition, there will be minor loss of flood storage associated with the access road for the NAPL system that will be constructed over the engineered barrier.

To determine the overall net change (loss) in flood storage capacity, the existing topographic conditions were compared to the anticipated, final topographic conditions. To offset this loss in flood storage capacity, GE will obtain the necessary flood storage compensation through gains in flood storage capacity resulting from other projects within the 100-year floodplain. As discussed in Section 5.8 of this Final Work Plan, GE proposes to address the ways in which it will compensate for this loss in storage capacity in a separate letter.

SURFACE TO SURFACE VOLUME REPORT

Blasland, Bouck, & Lee, Inc.
6723 Towpath Road
Syracuse, New York 13214
1-315-446-2570

Project: V:\GE_Pittsfield_CD_Lyman_St_Confidential\Notes and Data\TM\
LYMAN STREET.pro

Report Generated: Thursday, August 11, 2005 11:18:58 AM

Where the second surface is above the first the volume is reported as fill.
Where the second surface is below the first the volume is reported as
excavation.

Shrinkage/swell factors:	Excavation	1.0000	Fill	1.0000
First Surface Layer Name	Number of Points	Second Surface Layer Name	Number of Points	
-----	-----	-----	-----	
Existing Grade	16,895	Proposed Final Grade	1,622	
Excavation Volume (Cu. Yd.)		Fill Volume (Cu. Yd.)		
-----		-----		
	230		11,430	

Net Difference: 11,200 Cu. Yd. Borrow

Attachment D

Contractor Submittal Tracking Form

Attachment D
General Electric Company
Pittsfield, Massachusetts

Lyman Street Area

Contractor Submittal Tracking Form

Item No.	Submittal Description	Specification Reference (see Note 2)	Date Received	Review Conducted by:		Interim Status/Date (see Note 1)	Final Status/Date (see Note 1)	Notes
				GE Project Manager	Design Engineer			
1	Operations Plan - The Plan shall address, but not be limited to the following items:	Section 7.3						
	• List of Equipment to be used on-site.	Section 7.3						
	• Recreational property protection procedures.	Section 7.3						
	• Work Schedule	Section 7.3						
	• The Contractor's proposed plan for controlling vehicular and pedestrian traffic while performing construction and operational activities..	Section 7.3						
	• Proposed sheetpiling design (if applicable) or alternate excavation stabilization measures (Section 5.4).	Section 7.3						
	• The Contractor's qualifications package (if requested by GE).	Section 7.3						
	• Stormwater (including run-on and run-off), erosion, noise, and dust control measures.	Section 7.3						
	• The Contractor's proposed excavation approach	Section 7.3						
	• Materials handling and staging approach.	Section 7.3						
2	Health and Safety Plan - The Plan shall address, but not be limited to the following items (Refer to Note 3):	Section 7.3						
	• Identification of Key Personnel	Section 7.3						
	• Training	Section 7.3						
	• Medical Surveillance	Section 7.3						
	• Site Hazards	Section 7.3						
	• Work Zones	Section 7.3						
	• Personal Safety Equipment and Protective Clothing	Section 7.3						
	• Personal Air Monitoring	Section 7.3						
	• Personnel Decontamination	Section 7.3						
	• Confined Space Entry	Section 7.3						
	• Material Safety Data Sheets	Section 7.3						
	• Construction Safety Procedures	Section 7.3						
	• Standard Operating Procedures	Section 7.3						
	Contingency Plan - The Plan shall address, but not be limited to the following items:	Section 7.3						
	• Spill prevention control and countermeasures plan for all materials brought on site.	Section 7.3						
3	• Emergency vehicular access/egress.	Section 7.3						
	• Evacuation procedures of personnel from the work sites.	Section 7.3						
	• For work sites that include or are adjacent to a surface water drainage way, a flood control contingency plan to identify measures to protect the work site(s) and the waterway from impacts in the event of a high water and/or flood conditions.	Section 7.3						
	• List of all contact personnel with phone numbers and procedures for notifying each.	Section 7.3						
	• Routes to local hospitals	Section 7.3						
	• Identification of responsible personnel who will be in a position at all times to receive incoming phone calls and to dispatch Contractor personnel and equipment in the event of an emergency situation.	Section 7.3						
	Identification of backfill sources and locations and analytical data for samples collected from the backfill sources (unless the backfill sources have already been approved based on previously submitted analytical data).	Section 7.3/9.0						
	Record Drawings to document any deviations from the work specified in the RFP. Deviations shall be noted on the Record Drawings as soon as possible following their identification by the Contractor, GE, or GE's Representative.	Section 8.2						

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General Electric Company
Pittsfield, Massachusetts**

Lyman Street Area

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				GE Project Manager	Design Engineer			
6	Daily Construction Reports prepared by GE's Representative will include documentation of problems and/or deficiencies noted during construction (e.g., when construction material or activity is observed or tested that does not meet the specified requirements), and corrective action employed to address the problems or deficiencies. The documentation reports will be cross-referenced to the reports, data sheets, forms, and check lists that contain data or observations leading to the determination of a problem or deficiency. Problem and deficiency identification and corrective action documentation.	--						
7	Earthwork - Proposed equipment and compaction method(s).	Materials and Performance - Section 02200 (1.04)(A)						
8	Restoration of Surfaces - A schedule of restoration operations.	Materials and Performance - Section 02207 (1.03)(A)						
9	Restoration of Surfaces - Material cut sheets for chain link fencing.	Materials and Performance - Section 02207 (1.03)(B)						
10	Restoration of Surfaces - Name of proposed fencing installer.	Materials and Performance - Section 02207 (1.03)(C)						
11	Topsoil, Seeding and Mulch - Analysis of the seed and fertilizer, and proposed application rates.	Materials and Performance - Section 02212 (1.03)(A)						
12	Topsoil, Seeding and Mulch - Should hydroseed be used, the Contractor shall submit all data including material and application rates.	Materials and Performance - Section 02212 (1.03)(B)						
13	Topsoil, Seeding and Mulch - Sample of topsoil to be tested by GE for chemical contaminants.	Materials and Performance - Section 02212 (1.03)(C)						
14	Geocomposite - Manufacturer's data for the geocomposite including physical properties and roll size.	Materials and Performance - Section 02219 (1.04)(A)						
15	Geocomposite - The origin and identification of the geotextile and geonet used to fabricate the geocomposite.	Materials and Performance - Section 02219 (1.04)(B)						
16	Geocomposite - Geocomposite material sample.	Materials and Performance - Section 02219 (1.04)(C)						
17	Geocomposite - Manufacturer's installation procedures and specifications.	--						
18	Geocomposite - Manufacturer's quality assurance/quality control program.	Materials and Performance - Section 02219 (1.04)(D)						
19	Geocomposite - Written certification that the MARVs provided under 1.04A of this section are guaranteed by the Manufacturer.	Materials and Performance - Section 02219 (1.04)(E)						
20	Geocomposite - Contractor's proposed transportation, handling, and storage techniques.	Materials and Performance - Section 02219 (1.04)(F)						
21	Geocomposite - Written certification by the Contractor that the field delivered geocomposite has not been damaged due to improper transportation, handling, or storage. This certification shall be provided prior to the installation of the geocomposite.	Materials and Performance - Section 02219 (1.04)(G)						
22	Geocomposite - Prior to installation, the Installer shall certify in writing that the surface on which the geocomposite will be installed is acceptable. The certification is subject to the review and approval or rejection by GE or GE's Representative.	Materials and Performance - Section 02219 (1.04)(H)						
23	Geocomposite - Prior to installation, the Contractor shall provide the Installer's written verification that the geocomposite has not been damaged due to improper transportation, handling, or storage.	Materials and Performance - Section 02219 (1.04)(I)						
24	Geocomposite - Each of the installer's personnel shall have recorded 500,000 sq. ft. of successful material installation.	Materials and Performance - Section 02219 (1.04)(J)						
25	Geocomposite - The Contractor shall provide shop drawings depicting installation details, a panel layout diagram, and a description of proposed installation techniques.	Materials and Performance - Section 02219 (1.04)(K)						

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General Electric Company
Pittsfield, Massachusetts**

Lyman Street Area

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				GE Project Manager	Design Engineer			
26	Geocomposite -The Contractor shall provide quality control certificates for the geocomposite, which identifies the sections of field delivered material they represent, signed by a responsible party employed by the Manufacturer. The quality control certificates shall include lot and roll identification numbers, testing procedures and results of quality control tests. At a minimum, results shall be given for the following: <ul style="list-style-type: none"> Unit weight (geotextile component) (ASTM D5261). Thickness (ASTM D1777). Geotextile-geonet ply adhesion (ASTM D413). Transmissivity Testing (ASTM D4716*) (See Note 5). * Test methods to be performed with the following modifications: Substrate Material: 60-mil HDPE geomembrane Superstrate Material: Neoprene or 6 inches of representative soil Applied Normal Compressive Load: 5,000 lbs/sq.ft. Seating Time: 100 hours (minimum) Hydraulic Gradient: 0.1	Materials and Performance - Section 02219 (1.04)(L)						
27	Geocomposite - The Contractor shall submit written certification that the delivered material meets the manufacturer's specifications. The Contractor shall also provide the lot and roll number for the material delivered to the site.	Materials and Performance - Section 02219 (1.04)(M)						
28	Fill Materials - Sieve analysis of all granular materials.	Materials and Performance - Section 02222 (1.04)(A)						
29	Fill Materials - Sample of soil to be tested for chemical contaminants as discussed in this Work Plan.	Materials and Performance - Section 02222 (1.04)(B)						
30	Geotextile Fabric - Manufacturer's data for geotextile including, at a minimum, physical properties, packaging, and installation techniques.	Materials and Performance - Section 02232 (1.04)(A)						
31	Geotextile Fabric -The origin (resin supplier's name and resin production plant) and identification (brand name and number) of the resin used to manufacture the geotextile.	Materials and Performance - Section 02232 (1.04)(B)						
32	Geotextile Fabric - Geotextile material sample.	Materials and Performance - Section 02232 (1.04)(C)						
33	Geotextile Fabric - Manufacturer's installation procedures and specifications.	--						
34	Geotextile Fabric - Manufacturer's quality assurance/quality control program.	Materials and Performance - Section 02232 (1.04)(D)						
35	Geotextile Fabric - Quality control test results conducted by the Manufacturer during the manufacturing of the geotextile fabric delivered to the project site. The results shall identify the sections/panels of the fabric they represent. The Contractor shall also provide the lot and roll number for the fabric delivered to the site.	Materials and Performance - Section 02232 (1.04)(E)						
36	Geotextile Fabric - Written certification that the MARVs provided under 2.02 of this section are guaranteed by the Manufacturer.	Materials and Performance - Section 02232 (1.04)(F)						
37	Geotextile Fabric - Proposed transportation, handling, storage, and installation techniques.	Materials and Performance - Section 02232 (1.04)(G)						
38	Geotextile Fabric - Shop drawings depicting installation details and a description o proposed installation techniques.	Materials and Performance - Section 02232 (1.04)(H)						
39	Geotextile Fabric - Manufacturer's standard warranty provided for the geotextiles.	Materials and Performance - Section 02232 (1.04)(I)						
40	Geotextile Fabric - Written certification by the Contractor that the field delivered material meets the manufacturer's specifications.	Materials and Performance - Section 02232 (1.04)(J)						
41	Geotextile Fabric - Written certification by the Contractor that the field delivered geotextile has not been damaged due to improper transportation, handling, or storage. This certification shall be provided prior to installation of the geotextile.	Materials and Performance - Section 02232 (1.04)(K)						

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Pittsfield, Massachusetts**

Lyman Street Area

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				GE Project Manager	Design Engineer			
42	Geotextile Fabric - Prior to installing the geotextile, the Installer shall certify in writing that the surface on which the geotextile will be installed is acceptable. The certification is subject to the review and approval or rejection by GE or GE's Representative.	Materials and Performance - Section 02232 (1.04)(L)						
43	Geotextile Fabric -The Contractor shall provide quality control tests conducted by the Manufacturer. The quality control testing results shall include lot and roll identification numbers representative of the field-delivered material. At a minimum results shall be given in accordance with the Technical Drawings and Specifications for: Unit weight (ASTM D5261), Grab strength (ASTM D4632), Trapezoidal tear strength (ASTM D4533), Burst strength (ASTM D3786), Puncture structure (ASTM D4833), UV resistance (ASTM D4355), Filtration (ASTM D4751), Permeability (ASTM D4491, not required for cushioning geotextile).	Materials and Performance - Section 02232 (1.04)(M)						
44	Flexible Membrane Liner - FML Manufacturer's corporate background and information.	Materials and Performance - Section 02234 (1.04)(A1.a)						
45	Flexible Membrane Liner - Manufacturing capabilities including: quality control procedures for manufacturing, and list of material properties including certified test results, to which FML samples are attached.	Materials and Performance - Section 02234 (1.04)(A1.b)						
46	Flexible Membrane Liner - Origin (resin supplier's name, resin production plant) and identification (brand name, number) of the resin.	Materials and Performance - Section 02234 (1.04)(A1.c)						
47	Flexible Membrane Liner - Copies of dated quality control certificates issued by the resin supplier.	Materials and Performance - Section 02234 (1.04)(A1.d)						
48	Flexible Membrane Liner - Written certification that the MARVs given in the specification are guaranteed by the Manufacturer.	Materials and Performance - Section 02234 (1.04)(A1.e)						
49	Flexible Membrane Liner - Copy of FML Installer's letter of approval or license by the Manufacturer.	Materials and Performance - Section 02234 (1.04)(B1.a)						
50	Flexible Membrane Liner - Upon completion, the Contractor shall submit record drawings illustrating the following information: Dimensions of all FML field panels; Panel locations referenced to the Technical Drawings which depict the identification number assigned to each FML panel; All field seams and panels with the appropriate number or code; and Location of all patches, repairs, and destructive testing samples.	Materials and Performance - Section 02234 (1.04)(C)						
51	Flexible Membrane Liner - Shop drawings, including the following: Layout plan; Quality control program manuals covering all phases of manufacturing and installation; and complete and detailed written instructions for the storage, handling, installation, seaming, inspection plan fail criteria for liner inspections, and QA/QC testing procedures of the liner in compliance with these specifications and the condition of its warranty.	Materials and Performance - Section 02234 (1.04)(D)						
52	Flexible Membrane Liner - The Contractor shall obtain and submit to GE or GE's Representative from the Manufacturer a standard warranty provided for the FML.	Materials and Performance - Section 02234 (1.04)(E)						
53	Flexible Membrane Liner - The Contractor shall provide quality control tests conducted by the Manufacturer. The quality control testing results shall include lot and roll identification numbers, representative of the field delivered material. At a minimum, results shall be given in accordance with the Technical Drawings and Specifications for Density (ASTM D1505), Carbon black content (ASTM D1603), Carbon black dispersion (ASTM D5596), Thickness (ASTM D5994), Tensile properties (ASTM D638), and Tear strength (ASTM D1004).	Materials and Performance - Section 02234 (1.04)(F)						
54	Flexible Membrane Liner - The FML Installer shall certify in writing that the final surface on which the FML is to be installed is acceptable to both GE and the Contractor prior to installation of the FML.	Materials and Performance - Section 02234 (1.04)(G)						

**Attachment D
General Electric Company
Pittsfield, Massachusetts**

Lyman Street Area

Contractor Submittal Tracking Form

Item No.	Submittal Description	Specification Reference (see Note 2)	Date Received	Review Conducted by:		Interim Status/Date (see Note 1)	Final Status/Date (see Note 1)	Notes
				GE Project Manager	Design Engineer			
55	Flexible Membrane Liner - Quality Control/Quality Assurance: Written certification by the Contractor that the field-delivered FML has not been damaged due to improper transportation, handling, or storage. This certification shall be provided prior to the installation of the FML.	Materials and Performance - Section 02234 (1.04)(H)						
56	Concrete - Contractor shall submit concrete mix design	Technical Drawing 8, Details 7 and 8						
57	Concrete - Contractor shall submit concrete pad construction sequence and schedule.	Technical Drawing 8, Detail 7						

Notes:

- Submittal status nomenclature is as follows:
R - Reviewed
N - Reviewed and noted
S - Resubmit
J - Rejected
- All Section, Specification, and Drawing references are to the *Final RDRA Work Plan* (BBL, September 2005).
- The Health and Safety Plan is required for GE record-keeping purposes only and therefore GE and BBL will conduct a review of the plan for completeness only. Determination of the appropriate level of worker safety, equipment, and procedures based on site conditions must be made by the Contractor based on site visits, review of available information, and anticipated site activities.
- Shaded item numbers indicate submittals required by GE but not subject to submittal to EPA as part of the supplemental information package.
- Geocomposite submittals to verify transmissivity shall be submitted as early as possible to prevent potential scheduling conflicts.

Attachment E

Ambient Air Monitoring Program

SCOPE OF WORK

for

**Ambient Air PCB & Particulate Monitoring
at the Lyman Street Area**

**General Electric Company
Pittsfield, Massachusetts**

Prepared by

Berkshire Environmental Consultants, Inc.
152 North Street, Suite 250
Pittsfield, MA 01201

August 2005

TABLE OF CONTENTS

1.0	Introduction
2.0	Sampling Objective
3.0	Site Activity
4.0	PCB Monitoring Program
4.1	High Volume PCB Sampling
4.2	Analytical Procedures
5.0	Particulate Monitoring
6.0	Quality Assurance and Quality Control Procedures
7.0	PCB Sample Documentation, Handling and Shipment
8.0	Meteorological Monitoring
9.0	Documentation and Reporting
10.0	Action Levels
10.1	PCBs
10.2	Particulate Matter

1.0 INTRODUCTION

This Scope of Work (SOW) describes the ambient air monitoring for polychlorinated biphenyls (PCBs) and particulate matter which will be conducted during soil remediation actions at the Lyman Street Area in Pittsfield, Massachusetts. Soil removal will be taking place at Parcels I9-4-15, I9-4-19, I9-4-25, I9-4-203, I9-4-201, I9-8-1, and I9-8-2. These properties are located along the north bank of the Housatonic River between the River and East Street in Pittsfield.

2.0 SAMPLING OBJECTIVE

The objectives of this sampling program are two-fold:

1. To obtain valid and representative data on ambient levels of PCBs around the remedial site before and during remedial activities to insure that the activities are not causing an unacceptable increase in ambient air concentrations of PCB.
2. To obtain valid and representative data on ambient levels of particulate around the remedial site during soil remediation activities to insure that the remedial activities are not causing an unacceptable increase in ambient air concentrations of particulate.

3.0 SITE ACTIVITY

As described in the Final Work Plan, the on-site activities to be performed at the Lyman Street Area properties include the performance of soil removal/replacement, surface grading and construction of a vegetative barrier at the industrial and commercial properties identified above. It is anticipated that the remediation activities described in the Final Work Plan will be performed as one continuous phase of work. Performance of the remediation work presented in the Final Work Plan is subject to review and approval by the United States Environmental Protection Agency (US EPA) and the Massachusetts Department of Environmental Protection (MA DEP) (together, the Agencies), as well as execution of owner access agreements.

This ambient air monitoring program includes particulate and PCB monitoring during soil remediation activities.

4.0 PCB MONITORING PROGRAM

4.1 *High Volume PCB Sampling*

The high volume PCB sampling program will include the following elements:

High-Volume Monitoring Locations	3
Background Sites	1
Co-Located Sites (Field Duplicates)	1
Sampling Time	24 hours per sampling event
Sampling Period	Duration of soil remediation activity
Frequency of Sampling	Twice prior to the onset of soil remediation activity and once every four weeks during excavation and grading remediation activity*
No. of Blanks Per Sampling Event	1
Sampling Method	EPA Compendium Method TO-4A
Analytical Method	GC/ECD or GC/MS as described in EPA Method TO-4A

* Sampling frequency may be increased if either PCB or particulate monitoring levels exceed threshold values.

Ambient air monitoring for PCBs will be conducted during soil excavation and grading remediation activities. Sampling will be conducted for two 24-hour periods prior to the initiation of remediation and will proceed once every 4 weeks during soil remediation. At least one 24-hour PCB sampling event will be performed during remediation activity. The ambient air monitoring frequency for PCBs may be increased to bi-weekly in the event that ambient particulate concentrations at any one location consistently exceed the proposed particulate notification level (i.e. $>120 \mu\text{g}/\text{m}^3$). "Consistently exceeding" will be defined as concentrations greater than $120 \mu\text{g}/\text{m}^3$ on three consecutive 10-hour days or 5 days in any two-week period. Once PCB concentrations are below PCB action levels (see Section 10 of this Scope of Work) for two consecutive bi-weekly events, then PCB sampling frequency will revert to once every four weeks.

PCB background monitoring will be conducted prior to any on-site soil remediation activity at three locations on the perimeter of the removal action area for the Lyman Street Area (shown on Figure 2). During soil remediation activity, PCB monitoring will be conducted at three locations surrounding the activity and at one background location north of Building 9B near New York Avenue on the GE property in Pittsfield. Preliminary monitoring sites have been identified for the soil remediation

activity (as shown on Figure 3). Monitoring locations Ly-1, Ly-2 (2a or 2b)¹, and Ly-3 will be utilized for PCB monitoring during soil excavation and grading activities. The Ly-2 location (i.e. Ly-2a or Ly-2b) will be selected based on the most representative ambient sampling site for the area for that day. The locations will be noted and reported in the final project report. The preliminary locations of the monitors were selected based firstly on both wind direction and the location of potential receptors, and secondly on the presence of obstructions and other influences (such as truck traffic) that may adversely affect the representativeness of the data. The predominant wind direction is west-northwest based on five- and ten-year wind rose data from the Albany, NY NWS station.

Data from the GE owned station at the GE site in Pittsfield, MA also demonstrate a predominant WNW wind direction, however the data from the local station also show that the local wind direction and speed vary considerably. Therefore, air monitors have generally been placed in locations that will facilitate good downwind coverage, i.e. E or ESE of the construction activity, but also provide adequate coverage between the areas of construction and potential receptors regardless of wind direction.

The specific sampling locations for monitors may be modified based on the location and nature of the soil remediation activity, predominant wind direction, the location of potential receptors, physical obstructions (i.e. trees, buildings), the availability of power, site security, site accessibility, etc. Any significant modifications to the locations of monitors will be reviewed with the GE Project Manager.

The detection limit (DL) for PCB analysis of the high volume samples will be $0.0003 \mu\text{g}/\text{m}^3$, in consideration of the following:

Avg. Sampling Rate	$0.225 \text{ m}^3/\text{min.}$
Avg. Sample Volume	$324 \text{ m}^3/\text{PUF}$
Analytical DL	$0.1 \mu\text{g}/\text{PUF}$
Project DL	$0.0003 \mu\text{g}/\text{m}^3$

The sampling method to be used for PCBs in the high volume samples is US EPA Compendium Method TO-4A, Determination of Pesticides and Polychlorinated Biphenyls in Ambient Air Using High Volume Polyurethane Foam (PUF) Sampling Followed by Gas Chromatographic/Multi-Detector Detection (GC/MD). This method employs a modified high volume sampler consisting of a glass fiber filter with a polyurethane foam (PUF) backup adsorbent cartridge to sample ambient air at a rate of $0.225 \text{ m}^3/\text{min.}$ A General Metal Works Model GPS-1 Sampler or equivalent will be used. The filter and cartridge will be placed in clean, sealed containers and returned to the laboratory for analysis.

¹ Either site Ly-2a or Ly-2b will be used as the representative location depending on the area of site activity for that day.

Procedures for sample media preparation and calibration of the sampling system are specified in Method TO-4A. TO-4A further specifies procedures for calculation and data reporting, and the assessment of data for accuracy and precision.

The samplers will be monitored at six-hour intervals over each 24-hour sampling period. During these six-hour checks, barometric pressure, temperature, and magnehelic pressure readings will be taken and the air flow adjusted to the target flow rate, as necessary. At the end of the sampling period, the sampling modules containing the fiber filters and PUF adsorbents will be removed from the samplers. Each glass fiber filter will be folded and placed on the PUF adsorbent for that sample and each sample consisting of a fiber filter and PUF adsorbent (inside a glass cartridge) will be wrapped in hexane rinsed aluminum foil. Each fiber filter and PUF adsorbent set will be labeled as one sample. The samples will be wrapped, packaged in blue ice and sent under chain-of-custody to the laboratory for analysis.

The PCB sampling probe height for all high volume monitors will be approximately 2.0 meters above the ground. This height is adequate to represent the breathing zone and to be above the influence of ground activity around the monitor. The location of the samplers will be in conformance, to the extent practical, with the siting requirements for ambient monitors in Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD), U.S. EPA. May, 1987.

4.2 *Analytical Procedures*

In the high volume samples, the PCBs will be recovered by Soxhlet extraction with 10% diethyl ether in hexane. The extracts will be reduced in volume using Kuderna-Danish (K-D) concentration techniques and subjected to column chromatographic cleanup. The extracts will be analyzed for PCBs using gas chromatography with either electron capture detection (GC/ECD) or mass spectrometry detection (GC/MS) as described TO-4A.

The samples will be analyzed for the following PCB Aroclors:

PCB-1016	PCB-1221
PCB-1232	PCB-1242
PCB-1248	PCB-1254
PCB-1260	

5.0 PARTICULATE MONITORING

Ambient air monitoring for particulate matter will be conducted during all soil remediation activities. Specifically, real-time ambient particulate monitoring will be performed during all active on-site soil remediation activities. Such monitoring will be conducted at three on-site locations, which will vary as site activities progress, and at one background location

north of Building 9B near New York Avenue on the GE property in Pittsfield, Massachusetts. Preliminary monitoring sites have been identified in Figure 2 (see the discussion of monitoring locations in Section 4.0 of this Scope of Work). The specific locations for stations have been preliminarily selected based on the location and nature of the soil remediation activities, predominant wind direction, location of potential receptors, availability of power, site accessibility, and site security. Any significant modifications to the locations of monitors will be reviewed with the GE Project Manager.

At the background and at least one on-site location, real-time particulate monitoring will be performed using a MIE dataRAM Model DR-2000/4000 real time particulate monitor or equivalent. Each Model DR-2000/4000 monitor or equivalent is equipped with a temperature conditioning heater and in-line impactor head to monitor and record particulate concentrations with a mean diameter less than 10 micrometers (PM₁₀). At the remaining two on-site locations, real-time particulate monitoring will be performed using a MIE dataRAM Model pDR-1000 or equivalent. Particulate monitoring will typically be conducted at all sites for approximately 10 hours daily, from 7 a.m. to 5 p.m., during soil remediation activities. Additional site activities may warrant a longer monitoring period. Particulate data will be recorded and averaged by the instruments' dataloggers every 15 minutes.

Calibrations and maintenance will be conducted at the frequency and in accordance with the procedures recommended by the manufacturer. All calibrations will be recorded.

6.0 QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

Quality assurance and quality control (QA/QC) procedures for the PCB air sampling program follow those described in the Ambient Air Monitoring Plan contained in the GE Project Operations Plan (AAMP/POP) and Method TO-4A. Quality assurance and quality control for the particulate sampling will be based on manufacturer's recommendations.

7.0 PCB SAMPLE DOCUMENTATION, HANDLING AND SHIPMENT

Each filter holder and PUF cartridge holder will be pre-marked with a permanent identification number. As each sample is collected, instrument operating data will be recorded on a field data form along with the date, time and location of collection.

All samples will be securely wrapped for shipment. PCB samples will be preserved at 4°C and shipped on blue ice. Samples will be shipped under chain-of-custody by commercial overnight carrier or courier to the analytical laboratory. Complete details on the PCB sample shipment procedures are contained in the AAMP/POP.

8.0 METEOROLOGICAL MONITORING

Hourly meteorological data from the Automated Surface Observation System (ASOS) Monitor operated at the Pittsfield Municipal Airport in Pittsfield, Massachusetts will be included with the sampling results. This ASOS Monitor is operated by the National Weather Service, Federal Aviation Administration, and the Department of Defense. The ASOS Monitor measures and records wind speed, wind direction, precipitation, temperature, sky conditions, barometric pressure, and relative humidity.

9.0 DOCUMENTATION AND REPORTING

Particulate data will be summarized and reported to the GE Project Manager and the Blasland, Bouck & Lee (BBL) Project Manager. If there is an exceedance of a reporting threshold, GE will be notified as soon as possible. All field and laboratory data recorded during ambient monitoring will be documented according to the procedures in the AAMP/POP. A written report summarizing the results will be provided to GE and BBL after the conclusion of sampling and will include the following:

- Date and Time of Sampling
- Sampling Locations
- Calibration and Maintenance Activities
- Pollutants Monitored
- Number of Samples Collected
- Analytical Results
- Quality Assurance Assessment
- Meteorological Data Summary
- Discussion of Problems or Disruptions

10.0 ACTION LEVELS

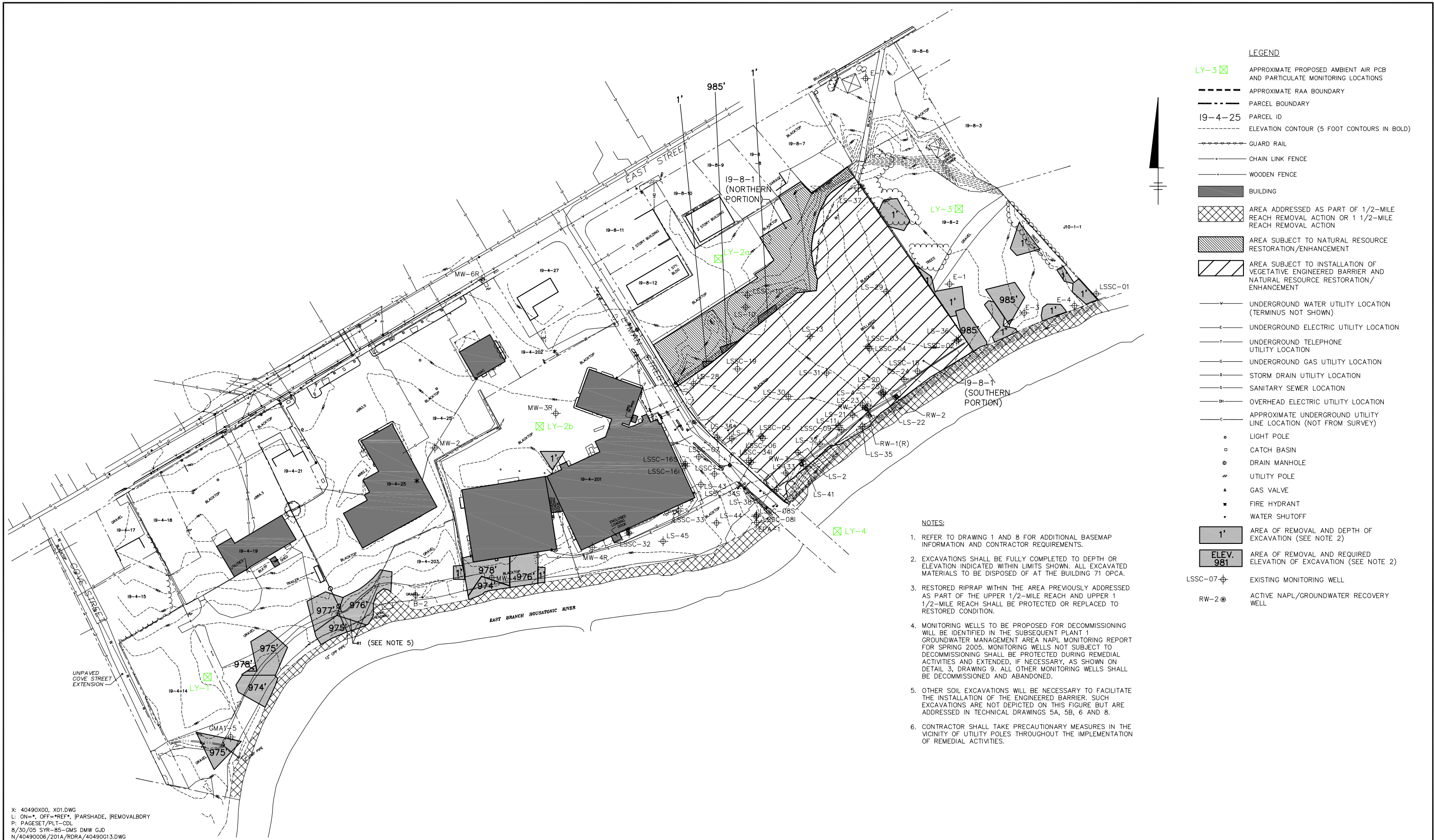
10.1 *PCBs*

The notification and action levels for PCB concentrations in ambient air are 0.05 $\mu\text{g}/\text{m}^3$ (24-hour average) and 0.1 $\mu\text{g}/\text{m}^3$ (24-hour average), respectively. These are the same levels established by EPA for the other remediation activities in Pittsfield. Any exceedance of the notification level will be immediately reported to the GE Project Manager.

10.2 *Particulate Matter*

For each day of monitoring, the particulate data from the on-site monitors will initially be compared with the data from the background monitor. If the average 10-hour PM_{10} concentration at any on-site monitor exceeds the average concentration at the background monitor, the on-site concentrations will then be compared with the

notification level of $120 \mu\text{g}/\text{m}^3$ (micrograms per cubic meter) -- which represents 80 percent of the current 24-hour National Ambient Air Quality Standard (NAAQS) for PM_{10} ($150 \mu\text{g}/\text{m}^3$). This level has been selected to allow notice to GE before concentrations reach the level of the 24-hour NAAQS. Any exceedances of the notification level or the NAAQS will be immediately reported to the GE Project Manager.



Attachment F

Post-Removal Site Control/ Restoration Project Monitoring and Maintenance Plan

Attachment F - Post-Removal Site Control/ Restoration Project Monitoring and Maintenance Plan

In accordance with Section 3.7 of the *Statement of Work for Removal Actions Outside the River* (SOW), which is Appendix E of the CD, and as required in Technical Attachments I and J of the SOW, this Post-Removal Site Control/Restoration Project Monitoring and Maintenance Plan describes the future inspection, maintenance, and repair activities (I/M activities) to be conducted at the Lyman Street Area. The Performance Standards and other requirements set forth in Section 8 of Technical Attachment I to the SOW pertain to the monitoring and maintenance activities associated with natural resource restoration/enhancement activities to be conducted by GE within the Lyman Street Parking Lot on the southern portion of Parcel I9-8-1 and certain other areas at the northern portion of that parcel. Technical Attachment J of the SOW describes the future inspection, maintenance, and repair activities (I/M activities) to be conducted by GE at all areas where soil removal and replacement activities will be performed (Parcels I9-4-14, I9-4-19, I9-4-25/I9-4-202, I9-4-203, I9-4-201, I9-8-1, I9-8-2, Sub-Area 201A, and Recreational Area R1) and the area subject to the installation of the vegetated engineered barrier. The scope of these activities for the Lyman Street Area is further described in the sections below.

General Semi-Annual Inspection Activities

The I/M activities on all restored areas will be conducted on a semi-annual basis and will consist of the activities specified in Technical Attachment J of the SOW and further described below. Section 2.1.1 of Attachment J provides that I/M activities be conducted semiannually at engineered barriers (vegetated). Section 2.3 of that same attachment requires that I/M activities are to be conducted for vegetated covers in areas of soil removal and specifies that these activities are to be the same as those discussed for soil covers within non-inundated areas (as specified in Section 2.2 of Attachment J). These I/M activities for the Lyman Street Area are as follows.

GE will initiate post-construction inspections of the restored surfaces at the Lyman Street Area following completion of the construction activities. Such inspections will be performed for both the engineered barriers and the other restored areas.

For the engineered barrier areas, the first inspection will be performed approximately one month after completion of the construction activities to visually identify potential problems associated with such areas, such as settlement or the presence of stressed vegetation. Thereafter, the engineered barrier areas will be inspected approximately every 6 months (until EPA approves a different frequency for such inspections). These inspections will be performed by GE (or a designated GE representative) to assess the integrity of the engineered barriers (i.e., to identify deficiencies that would affect the integrity of the barriers).

Vegetative engineered barriers will be visually inspected for the following conditions as they would affect the integrity of the barriers: (a) evidence of topsoil erosion; (b) establishment and coverage of vegetation (e.g., bare or sparsely vegetated areas); (c) deficiencies in the soil layer overlying the synthetic cover components (e.g., excessive erosion, surface water ponding, depressions, exposed synthetic cover components, vehicle ruts, or other abnormalities); (d) damage to synthetic cover components; (e) uneven settlement relative to surrounding areas; (f) the proper functioning of any associated surface water diversions; and (g) overall integrity (including animal burrows, unauthorized excavation, or other conditions that could jeopardize the integrity of the barriers).

For other backfilled/restored areas, the first inspection will likewise be performed approximately one month after completion of construction activities. Thereafter, these areas will be inspected every 6 months for the first year after restoration and annually thereafter (subject to subsequent EPA approval of a different frequency). At a minimum, these inspections will include visual observations of the following: (a) erosion controls to verify their continued effectiveness until such time vegetation is sufficiently established; (b) any areas where excessive settlement has occurred relative to the surrounding areas; (c) any drainage or growth problems due to possible over-compaction of the backfill materials; and (d) other conditions that could jeopardize the performance of the removal actions as designed. Inspections are anticipated to occur in May and October of each year to ensure that the vegetation is growing as anticipated and is providing the desired degree of erosion control.

Overall Maintenance/Repair

GE will be responsible for maintenance and repair of site conditions and features as necessary to meet the requirements of the CD and SOW. Such activities will include addressing any conditions noted during the periodic inspections. Examples of maintenance/repair activities that may be identified and conducted as a result of the periodic inspections include, but are not limited to, placement of additional topsoil in areas of erosion or settlement and repair or replacement of any components of the engineered barriers exhibiting deficiencies or

potential problems. If needed, additional planting or seeding will be performed to replace dead or dying vegetation.

Any such conditions noted as a result of periodic inspections (or as otherwise observed by GE) will be addressed as soon as practicable. The nature of the associated maintenance/repair will be documented in the subsequent inspection report as described further below.

Monitoring and Maintenance for Natural Resource Restoration and Enhancement

To achieve the applicable Performance Standards and requirements in Technical Attachment I of the SOW, GE will implement this monitoring program following completion of natural resource restoration and enhancement actions at the Lyman Street Parking Lot. The monitoring program will consist of two visits during each of the first three years after planting, one visit during the fifth year after planting, and one visit during the seventh year after planting. In each of the first three years after planting, visits will be conducted in the late spring after the first leaf flush (May/June) and in the summer (July/August) to assess plant survival. The single visit in the fifth year and seventh year after planting will be conducted in the summer (July/August).

Each monitoring visit will consist of a field inspection and survey of the natural resource restoration and enhancement work at Parcel I9-8-1. Estimates of groundcover by herbaceous species will be made to verify aerial coverage. Any indications of damage from trespassing or herbivory will be noted. In addition, GE will arrange for a qualified individual to assess the apparent vigor of the planted specimens using best professional judgment based on accepted restoration standards and familiarity with local conditions. Any herbaceous planting area within the Lyman Street Parking Lot with less than 100% cover will be supplemented with additional planting and seeding. Recommendations will also be made for supplemental activities such as additional fertilizing or watering, and implementation of measures to reduce herbivory. In the event a significant loss of plantings (greater than 1/4 acre) is observed during one of the visits and GE is required to conduct replanting activities, the timing for monitoring of that area will be restarted following replanting activities. GE will not be required to replant an area if the loss of vegetation or growth failure is caused solely by actions of a third party (excluding a GE contractor).

During each of the monitoring visits, GE will also inspect for the presence of invasive species within the Lyman Street Parking Area. Invasive species of concern are Amur honeysuckle, Autumn olive, Black locust, Black swallow-wort, Common barberry, Common buckthorn, Garlic mustard, Glossy buckthorn, Goutweed or

Bishop's weed, Japanese barberry, Japanese honeysuckle, Japanese knotweed, Morrow's honeysuckle, Morrow's X Tatarian honeysuckle (hybrid), Multiflora rose, Norway maple, Oriental bittersweet, Phragmites - Reed grass, Porcelain berry, Purple loosestrife, Russian olive, Tatarian honeysuckle, and Yellow iris. GE will ensure that no greater than 5% of any area within the Lyman Street Parking Lot is covered with invasive species. Invasive species will be removed in an appropriate manner.

GE will prevent shrub and tree growth within the Lyman Street Parking Area through various means (i.e., periodic mowing, shrub/tree removal, etc.). Mowing will be conducted once every one to three years, and will occur no earlier in the year than August 1.

GE will inspect the bluebird box to ensure that it has not become damaged. If the damage is sufficient to render the box uninhabitable by bluebirds, then it will be replaced. Rock piles and stumps will be inspected to ensure that major damage from acts such as vandalism have not leveled or relocated the structures. Due to the use of these structures by small mammals for the creation of dens, GE will only conduct maintenance upon the rock piles and stumps (e.g., restacking the rock piles and/or reorienting the stumps) in the case of catastrophic damage to the structures.

Reporting

Reports on the overall inspection activity will be prepared after each inspection. These reports will be submitted to EPA and will document I/M activities performed since submittal of the previous inspection report. As required by Attachment J of the SOW, these reports will include the following information (as relevant):

- Description of the type and frequency of inspection and/or monitoring activities conducted;
- Description of any significant modifications to the inspection and/or monitoring program made since submittal of the preceding monitoring report;
- Description of any conditions or problems noted during the inspection and/or monitoring period which are affecting or may affect the completed remediation;
- Description of any measures taken to correct conditions affecting the performance of the response action;

-
- Results of any sampling analyses and screening conducted as part of the inspection and/or monitoring program; and

Description of any measures that may need to be performed to correct any conditions affecting the completed response actions.

With regard to the inspections of the resource restoration and enhancement activities, GE will prepare and submit to the Trustees an event-specific report on these inspection, monitoring, and maintenance activities, including the results of the inspections and any maintenance activities performed. The report will be prepared using field notes and other information collected during each of the monitoring visits. The report will include photographic documentation of the conditions of the Lyman Street Parking Lot. Such a report will be submitted to the Trustees, with copies to U.S. Environmental Protection Agency (EPA) and Massachusetts Department of Environmental Protection (MDEP), within 90 days of the inspection.

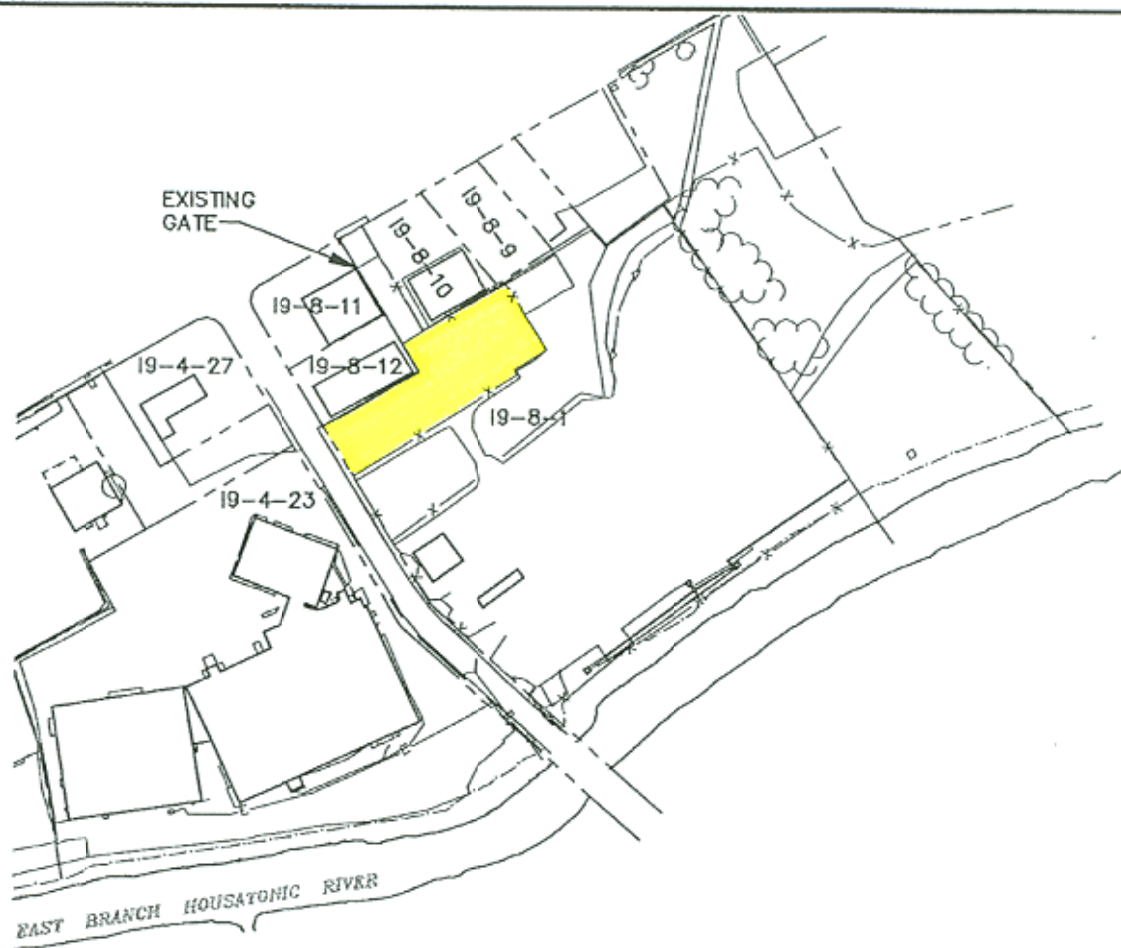
Contact Information

In accordance with Section 2.0 of Technical Attachment J of the SOW, provided below is the name and contact information for the person who will be responsible for conducting inspection and monitoring activities at the Lyman Street Area. The individual shown below may change during the period that these activities are conducted.

Name	Company/Entity	Telephone Number
Richard W. Gates	General Electric Company	(413) 448-5909

Attachment G

Figure 1 of Consent Decree Modification (March 31, 2005)



LEGEND:

- PROPERTY LINE
- EDGE OF WATER
- X- CHAIN LINK FENCE
- ===== RETAINING WALL
- ~~~~~ TREELINE
- 19-8-1 PARCEL ID
- BUILDING

APPROXIMATE 20,000 SQUARE FOOT
AREA NO LONGER SUBJECT TO
NATURAL RESOURCE RESTORATION/
ENHANCEMENT ACTIVITIES IN
ACCORDANCE WITH THE THIRD
MODIFICATION TO THE CONSENT
DECREE



THIRD MODIFICATION TO THE
CONSENT DECREE

PORTION OF LYMAN STREET
AREA THAT WILL NOT BE
SUBJECT TO NATURAL RESOURCE
RESTORATION/ENHANCEMENT
ACTIVITIES

FIGURE
1

X: 40468000, X02.0WG
L: CN=*, OFF=REF
P: PAGESET/PLT-AP
1/10/05 STR-54-GWS RLP D.P
C/40468000/40468005.DWG